



drishti

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Polity and Governance

Highlights

- Good Conduct and Early Release: SC
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- Gujarat's Disturbed Areas Act AMRUT Mission
- Sovereign Gold Bond Scheme
- Status of Bharatmala Pariyojana

Good Conduct and Early Release: SC

Why in News

Recently, the **Supreme Court** has held that the length of a prison sentence or the gravity of the crime cannot be the sole basis for denying a convict premature release from jail.

Key Points

➤ Background:

- The judgment came in a **plea made by two prisoners who have been imprisoned for a botched kidnapping for ransom** case in Uttar Pradesh.
- They are in their early middle age with a **record of good conduct** in jail.
- The court held that “their action of kidnapping was **nothing but a fanciful attempt to procure easy money**, for which they have learnt a painful life lesson” and **ordered their release**.

➤ Judgement:

- The **three-judge bench** held that an **assessment of the tendency to commit a crime** upon release “must be **based on antecedents as well as the conduct of the prisoner while in jail**, and not merely on his age or apprehensions of the victims and witnesses”.
- **Reformative justice** should not merely focus on public harmony but **should foster brotherhood and mutual acceptability**.
- **First-time offenders should especially be given a second chance** at life allowing them to look forward to a bright future.

Criminal Justice System in India

- The **Criminal Justice System** refers to the **agencies of government charged with enforcing the law, adjudicating crime, and correcting criminal conduct**.
- The criminal justice system is **essentially an instrument of social control**:
 - Society considers some behaviours so dangerous and destructive that it either strictly controls their occurrence or outlaws them outright.

Note:



- It is the job of the agencies of justice to prevent these behaviours by apprehending and punishing transgressors or deterring their future occurrence.

➤ **Retributive Justice:**

- It is a system of criminal justice based on the **punishment of offenders rather than on rehabilitation**.
- It holds that when an offender breaks the law, justice requires that they **must suffer in return**. It also requires that the **response to a crime must be proportional to the committed offence**.

➤ **Reformative or Restorative Justice:**

- It is generally the most appreciated theory of punishment as it believes in the concept that the **object is to extinct crime and not the criminal**.
- It believes that **nobody is born as a criminal and it is only the consequences of those circumstances** which were around the offender/criminal.

➤ **Objectives of Criminal Justice System:**

- To prevent the occurrence of crime.
- To punish the transgressors and the criminals.
- To rehabilitate the transgressors and the criminals.
- To compensate the victims as far as possible.
- To maintain law and order in society.
- To deter offenders from committing any criminal act in the future.

➤ **Challenges:**

- **Ineffectiveness:** The system had to protect the rights of the innocents and punish the guilty, but nowadays it has **become a tool of harassment for common people**.
- **Pendency of Cases:** According to **Economic Survey 2018-19**, there are about 3.5 crore cases pending in the judicial system, especially in the district and subordinate courts, which leads to the actualisation of the maxim "**Justice delayed is justice denied**".
- **Huge Undertrials:** India has **one of the world's largest number of undertrial prisoners**.
- **Inefficiency of Police:** Police being the front liner in the criminal **judiciary system**, plays a vital role in the administration of justice. However, **corruption, huge workload and accountability** of police is a major hurdle in speedy and transparent delivery of justice.

➤ **Solutions:**

- The **reason for victimisation should be given a major thrust in reforming laws** to identify the rights of crime victims.
- The **construction of new offences and reworking** of the existing classification of offences **must be guided by the principles of criminal jurisprudence** which have substantially altered in the past four decades.
- The classification of offences **must be done in a manner conducive to the management of crimes** in the future.
- Guiding principles need to be **developed after sufficient debate** before criminalising an act as a crime.
- The **discretion of judges** in deciding the quantum and nature of sentence differently for crimes of the same nature **should be based on principles of judicial precedent**.

Data Governance Quality Index: NITI Aayog

Why in News

Recently, the **Department of Fertilizers (Ministry of Chemicals and Fertilizers)** has been ranked 3rd out of the 65 Ministries/Departments with a score of 4.11 on a scale of 5 on **Data Governance Quality Index (DGQI)**.

- It has been ranked **2nd amongst the 16 Economic Ministries/Departments**.

Key Points

- DGQI survey was conducted by the **Development Monitoring and Evaluation Office (DMEO)**, **NITI Aayog** to assess different Ministries/Departments' performance on the implementation of **Central Sector Schemes (CS)** and **Centrally Sponsored Schemes (CSS)**.
- **Objective:** To drive healthy competition among them and promote cooperative peer learning from best practices.
- **Benefits:** Improved implementation framework of government policies, schemes and programmes to achieve the desired goals.
- **Six major themes of DGQI:** Data generation, Data quality, Use of technology, Data analysis, Use and

Note:

dissemination, Data security and Human resource capacity and Case studies.

- **Classification of Ministries/Departments:** Administrative, Strategic, Infrastructure, Social, Economic and Scientific.

Central Schemes

- The central schemes are divided into **Central Sector Schemes and Centrally Sponsored Schemes.**
- **Central Sector Schemes:**
 - These schemes are 100% funded by the Central government.
 - Implemented by the Central Government machinery.
 - Formulated on subjects mainly from the Union List.
 - For example, **Bharatnet, Namami Gange-National Ganga Plan**, etc.
- **Centrally Sponsored Schemes:**
 - These are the schemes by the centre where there is financial **participation by both the centre and states.**
 - CSS are again divided into **Core of the Core Schemes, Core Schemes and Optional schemes.**
 - Currently, there are **6 core of the core schemes** while 22 core schemes.
 - **National Social Assistance Programme.**
 - **Mahatma Gandhi National Rural Employment Guarantee Programme.**
 - **Umbrella Scheme for Development of Scheduled Castes.**
 - **Umbrella Programme for Development of Scheduled Tribes.**
 - **Umbrella Programme for Development of Minorities.**
 - **Umbrella Programme for Development of Other Vulnerable Groups.**
 - Most of these schemes prescribe specific financial participation by states. For example, in the case of **MGNREGA**, state governments have to incur 25% material expenditure.

Development

Monitoring and Evaluation Office

- It was constituted in September 2015 by **merging the erstwhile Program Evaluation Office (PEO) and the Independent Evaluation Office (IEO).**

- It is an **attached office under NITI Aayog**, aimed at fulfilling the organisation's monitoring and evaluation (M&E) mandate and building the M&E ecosystem in India.
- **Aim:**
 - To improve sustainable outcomes and impacts of the government.
 - To enable high-quality monitoring and evaluation of government programmes to improve effectiveness, efficiency, equity and sustainability of service delivery, outcomes and impacts.
- **Monitoring through Output-Outcome Framework:** In accordance with the **Union Budget for 2019-20**, the **Output-Outcome Framework** represents an important reform towards outcome-based monitoring. This is a paradigm shift from measuring simply physical and financial progress, to a governance model based on outcomes. DMEO has been working with Ministries and Departments to develop this framework since 2017.
- **Evaluation:** The Government has assigned DMEO and the NITI Aayog, the responsibility to conduct **the independent third-party evaluation of all the CSS** in a time-bound manner so that the findings of the evaluation are made available to appropriate authorities for determining the rationalization of the schemes.

World Habitat Day 2020

Why in News

Recently, the **United Nations** has designated the first Monday of October as the World Habitat Day. In 2020, it falls on 5th October and has to be observed every year.

Key Points

- **About:**
 - The day focuses on the **state of human settlements and people's right to sufficient shelter.**
 - It was **first celebrated in 1986** with the theme **"Shelter is My Right"** at **Nairobi, Kenya.**
- **Aim:** To remind people that they are responsible for the habitat of future generations.
- **Theme:** **"Housing for All-A better Urban Future"**.
 - The focus is to **promote sustainable housing management** to achieve **Sustainable Development Goal (SDG) 11**, which aims to make cities more inclusive, safe, resilient, and sustainable.

Note:

- The **Global Observance of World Habitat Day 2020**, is being co-hosted by **UN-Habitat and the Government of Indonesia**.
 - UN-Habitat is a United Nations agency for **Urban development that promotes sustainable human settlements**.
- **Global Scenario:**
 - **Urban Population:** Currently, around 55% of the world population is living in cities, and the number is growing every day.
 - **Slum Dwellers:** Around 1.8 billion people are still living in the slums.
 - **Sanitation:** Around 3 billion lack basic handwashing and sanitation facilities.

Indian Scenario

- **Challenges:** In a country of India's size, diversity, and population, it is a staggering challenge to implement an ambitious urban agenda.
 - **Lack of Basic Amenities:** Shortage of drinking water, sanitation, hygiene and housing conditions in slum areas especially.
 - **Public Health Infrastructure:** Despite the huge growth in urban population density during the last two decades, there has been no commensurate improvement in the healthcare infrastructure.
 - **High Level of Pollution:** The growing rate of air pollution due to vehicular traffic and huge construction and demolitions waste increase morbidity amongst the people living in the cities.
 - **Migration:** The large-scale migration from urban areas to the rural areas in the time of **Covid-19 pandemic** was a major challenge.
- **Measures:**
 - Major flagship Missions such as **Swachh Bharat Mission-Urban, Pradhan Mantri Awas Yojana-Urban**, the **Smart Cities Mission**, the **AMRUT Mission** were in implementation mode in India well before the SDGs were adopted by the other Member States.
 - **Housing:** There is a huge focus on the use of new and environmentally safe construction technologies and techniques. Through a **Global Housing Technology Challenge** (GHTC), the very best of national and international technologies are sought to be brought in.

- GHTC aims to **fast-track the construction of affordable housing** and meet the **target of constructing 1.2 crore houses by 2022**.
- GHTC **focuses on** identifying and mainstreaming proven demonstrable technologies for lighthouse projects and spotting potential future technologies for incubation and acceleration support through ASHA (Affordable Sustainable Housing Accelerators).
 - **Urban Poor:** The **PM SVANidhi scheme** targeting the street vendors who were affected by the Covid-19 induced lockdowns.
 - **National Urban Policy Framework 2018** seeks to rebuild Indian cities around clusters of human capital, instead of considering them simply as an agglomeration of land use.

➤ Suggestions:

- **Creation of a Database of Migrant Workers:** Recognition and identification of migrants is the first step towards a more enhanced framework to provide basic amenities.
- **Addressing Challenges:** The central and state governments need to continue their efforts to address the informality of the Indian economy, the rural-urban divide, the uneven growth within states and between regions in the country, and the social and economic inequalities associated with the poorest and vulnerable.
- **Unorganised Worker Index Number Cards:** These cards by the Labour Ministry would also help in formalisation of the workforce.
- **Focusing on Public Health Infrastructure:** Smart cities project does well by focusing on the creation of hard infrastructure for urban renewal.

MoU Under PM SVANidhi

Why in News

Recently, the **Ministry of Housing and Urban Affairs** (MoHUA) has entered into a **Memorandum of Understanding** (MoU) with **Swiggy** to onboard street food vendors on its **e-commerce** platform.

- This move is a part of the **Prime Minister Street Vendor's Atmanibhar Nidhi (PM SVANidhi) Scheme**.
- An **updated and modified version of PM SVANidhi Dashboard**, which facilitates users not only with a

Note:

better granular view of the scheme's performance but also with additional tools for comparisons, has also been launched.

Key Points

- The MoU will **give the vendors online access to thousands of consumers** and help them grow their businesses.
- **Aim:**
 - To **radically transform the business of street vendors** across cities, by facilitating them to **receive orders and serve customers using online mode of business.**
 - It becomes important during the ongoing **Covid-19 pandemic** where physical distancing is the key to check its spread.
 - To **empower street vendors with digital technology and facilitate greater income-earning opportunities** through e-commerce platforms.
- **Phased Implementation:**
 - In a first of its kind initiative, MoHUA and Swiggy will run a **pilot program by on-boarding 250 vendors** across **five cities** namely **Ahmedabad, Chennai, Delhi, Indore, and Varanasi.**
 - Upon the successful completion of the pilot, MoHUA and Swiggy **plan to expand this initiative across the country in phases.**
- **Key Stakeholders:** MoHUA, Municipal Corporations, **Food Safety and Standards Authority of India (FSSAI)**, Swiggy and **Goods and Services Tax (GST)** officials.
- **Assistance:** The street vendors will be helped with **Permanent Account Number (PAN)** and FSSAI registration, training on technology/partner app usage, menu digitisation and pricing, hygiene and packaging best practices.

PM SVANidhi Scheme

- It was announced as a part of the **Economic Stimulus-II** under the **Atmanirbhar Bharat Abhiyan.**
- It has been implemented since **1st June 2020**, for providing affordable working capital loan to street vendors to **resume their livelihoods that have been adversely affected due to Covid-19 lockdowns**, with a sanctioned **budget of Rs. 700 crore.**
- **Aims:**
 - To **benefit over 50 lakh street vendors** who had been vending on or before 24th March 2020, in

urban areas including those from surrounding peri-urban/rural areas.

- To **promote digital transactions** through cash-back incentives up to an amount of Rs. 1,200 per annum.
- **Features:**
 - The **vendors can avail a working capital loan of up to Rs. 10,000**, which is **repayable in monthly instalments** in the **tenure of one year.**
 - On timely/early repayment of the loan, an **interest subsidy of 7% per annum will be credited** to the bank accounts of beneficiaries through **Direct Benefit Transfer** on a quarterly basis.
 - There will be **no penalty on early repayment** of the loan. The vendors can avail the facility of the enhanced credit limit on timely/early repayment of the loan.
- **Recent Developments:**
 - As of **October 2020**, **over 20 lakh loan applications have been received** under the scheme and out of these over 7.5 lakh loans have been sanctioned.
 - **However, only 2 lakh applicants have received the money so far**, with officials and applicants pointing to a number of hurdles that are slowing the process.
- **Challenges:**
 - Several banks are **seeking applications on stamp papers** worth between Rs. 100 and Rs. 500.
 - There have also been instances of banks **seeking PAN cards and even checking the CIBIL or Credit score of applicants** or **state authorities asking for voter ID cards**, which many migrant vendors do not carry with them.
 - CIBIL score is an **evaluation of one's credit history and determines their eligibility for a loan.**
 - There have also been complaints of **harassment by police and municipal officials.**
- **Solutions:**
 - States should be asked to **ensure that street vendors are not harassed** by the authorities as all they are asking is a right to livelihood.
 - The Centre has also decided to **send the applications directly to bank branches listed by the applicant as a "preferred lender"** or where the vendor holds a savings bank account.
 - A **software has also been developed** that can "push" around 3 lakh applications to the banks.

Note:

Distribution of Property Cards Under SVAMITVA Scheme

Why in News

Recently, the Prime Minister has launched the **distribution of Property Cards** under the **SVAMITVA (Survey of Villages and Mapping with Improved Technology in Village Areas) Scheme** via video conferencing.

- It enables around one lakh property holders to **download their Property Cards through the SMS link** delivered on their mobile phones.
- This would be followed by physical distribution of the Property Cards by the respective State governments.

Key Points

- **About:** SVAMITVA is a **Central Sector Scheme** launched on the **National Panchayati Raj Day, 24th April 2020**.
- **Aims:**
 - To provide an **integrated property validation solution** for rural India.
 - To provide the '**record of rights**' to **village household owners in rural areas** and issue Property Cards.
 - The **demarcation** of rural areas would be done using **Drone Surveying technology**.
- **Implementation:** In a phased manner over a period of **four years (2020-2024)**.
- **Implementing Agency:**
 - Ministry of Panchayati Raj at National Level.
 - Revenue Department / Land Records Department in States.
 - **Survey of India** is a technology partner for implementation.
- **Coverage:** Around 6.62 lakh villages in **six states** viz. **Uttar Pradesh, Haryana, Maharashtra, Madhya Pradesh, Uttarakhand and Karnataka** (along with a few border villages of Punjab and Rajasthan).
 - It also includes the establishment of **Continuous Operating System (CORS) stations'** network across Punjab and Rajasthan in the Pilot phase (2020-21). CORS will assist in future drone flying activities.
- **Nomenclature for Property Cards:** Property Cards are known as '**Title deed**' in Haryana, '**Rural Property Ownership Records (RPOR)**' in Karnataka, '**Adhikar Abhilekh**' in Madhya Pradesh, '**Sannad**' in Maharashtra,

'**Svavitva Abhilekh**' in Uttarakhand and '**Gharauni**' in Uttar Pradesh.

➤ Benefits:

- It will bring **financial stability** to the citizens in rural India by enabling them to use their **property as a financial asset for taking loans** and other financial benefits.
- It will help in **creation of accurate land records** for rural planning.
- It will help in the **determination of property tax**.
- The survey infrastructure and GIS maps created can be **leveraged by any department** for their use.
- It will **reduce property related disputes** and legal cases.
- It will **support the preparation of better-quality Gram Panchayat Development Plan (GPDP)** by making use of GIS maps.
 - The Gram Panchayats are **constitutionally mandated for preparation of GPDPs** for economic development and social justice.
 - The GPDPs are **based on a participatory process in convergence with schemes** of all related Central Ministries/Line Departments related to 29 subjects listed in the **Eleventh Schedule of the Constitution**.

THSTI: Part of Vaccine Assessment Project

Why in News

The **Coalition of Epidemic Preparedness for Innovation (CEPI)**, a global initiative, has named **Translational Health Science and Technology Institute (THSTI)**, Faridabad as **one of the six laboratories for assessing Covid-19 vaccine candidates** that are under development.

Key Points

- **Six Laboratories:**
 - The **CEPI network will initially involve six labs**, one each in **Canada, Britain, Italy, the Netherlands, Bangladesh and India**.
 - All the labs would use the same reagents (cause a chemical reaction) and follow a common set of protocols to **measure the immune response of multiple vaccine candidates** under development and trial.

Note:

- This will **greatly harmonise the vaccine trial process** and allow different vaccine candidates to be compared and speed up the selection of the most effective candidate.
- The **mandate of the THSTI** is to provide validated assays (analysis) for vaccine development on a par with global standards.
 - Bioassay is the determination of the relative strength of a substance (drug) by comparing its effect on a test organism with that of a standard preparation.
- **Coalition of Epidemic Preparedness for Innovation (CEPI):**
 - CEPI is a **global partnership launched in 2017** to develop vaccines to stop future epidemics.
 - CEPI was **founded in Davos (Switzerland)** by the governments of **Norway and India**, the **Bill & Melinda Gates Foundation**, the Wellcome Trust, and the **World Economic Forum**.
 - The **Department of Biotechnology**, Ministry of Science & Technology, and Government of India has been implementing the **IndCEPI mission** 'India Centric Epidemic Preparedness through Rapid Vaccine Development: Supporting Indian Vaccine Development'.
 - The **objectives of this mission** are aligned with that of CEPI and aims to strengthen the development of vaccines and associated competencies/technologies for the diseases of epidemic potential in India.
- **Translational Health Science and Technology Institute (THSTI):**
 - It is an **autonomous institute of the Department of Biotechnology (DBT)**.
 - It is located in **Faridabad (Haryana)**.

Television Rating Points

Why in news

Recently, the Mumbai Police has claimed about a scam about the manipulation of **TRPs (Target Rating Points)** by some TV channels by rigging the devices used by the **Broadcast Audience Research Council (BARC) India**.

Key Points

- **About:** The TRP is the metric used by the marketing and advertising agencies to evaluate viewership.

- **Viewer:** Anyone who watches television for **more than a minute** is considered a viewer.
- It represents how many people, from which **socio-economic categories**, watched which channels for how much time during a particular period. This period is **one minute** as per the international standards.
- **Broadcast Audience Research Council (BARC)**
 - It is a company created in 2010 and jointly owned by advertisers, ad agencies, and broadcasting companies, represented by the Indian Society of Advertisers, the Indian Broadcasting Foundation and the Advertising Agencies Association of India.
 - The Ministry of Information and Broadcasting notified the **Policy Guidelines for Television Rating Agencies** in India on January 10, 2014, and registered BARC in July 2015 under these guidelines, to carry out television ratings in India.
- **Methodology of Calculation:**
 - **Bar-o-meters:** BARC has installed **Bar-O-meters** in over **45,000 empanelled households**. These record viewing details as well as audio watermarks of content.
 - Audio watermarks are embedded in video content prior to broadcast. These watermarks are not audible to the human ear, but can easily be detected and decoded using dedicated hardware and software.
 - **Selection of Households:** The households are chosen by an **annual Establishment Survey** which is a large-scale face-to-face survey of a sample of approximately 3 lakh households from the target population.
 - The panel chosen to capture TRPs must be representative of the country's population, and the methodology must be economically viable for the industry.
 - **Classification of Households:** These households are classified into 12 categories under the New Consumer Classification System (NCCS) adopted by BARC in 2015, based on the **education level of the main wage earner** and the **ownership of consumer durables** from a list of 11 items ranging from a power connection to a car.
 - **Data Collection:** While watching a show, members of the household register their presence by pressing their **separate viewer ID** button.

Note:

- This captures the duration for which the channel was watched and by whom and provides data on viewership habits across age and socio-economic groups.
- **Precautions to Prevent Rigging:**
 - The viewing behaviour of panel homes is reported to BARC India **directly and daily**.
 - **Coincidental checks** either physically or telephonically are done regularly. Certain **suspicious outliers** are also checked directly by BARC India.
 - These households **rotate randomly** every year and they are kept confidential.
- **Significance of TRP:**
 - These **influence programmes produced** for the viewers. Better ratings would promote a programme while poor ratings will discourage a programme.
 - TRPs are the main **currency for advertisers** to decide which channel to advertise on by calculating the **cost-per-rating-point (CPRP)**.
- **Limitations of TRP:**
 - The panel can be **infiltrated or tampered** by bribing viewers or cable operators or tampering with the selection of panel.
 - If the **sample size is very small**, e.g. for English News channels, the manipulation becomes easier as even manipulating a few homes will change the TRP.
 - There is an **absence of any specific law** through which the agents/ suspects involved in panel tampering/infiltration could be penalised.
 - About 70% of the revenue for television channels comes from advertising and only 30% from the subscription. **Dependence on advertisements** for revenue is leading to broadcasting content which suits the advertisers.

Issues in Goa Lokayukta

Why in News

Recently, Justice Prafulla Kumar Misra has retired from the post of Goa **Lokayukta** and has highlighted the issues related to the state office and the proceedings.

Key Points

- **Goa Lokayukta Act:**
 - Even much before the enactment of the Lokpal

- and Lokayuktas Act, 2013 itself, **many states had already set up the institution of Lokayuktas**.
- It was sent to the **Central government in 2003** and **passed in the Assembly only in October 2011**, after it was reintroduced.
- It is **modelled upon Karnataka and Kerala's Lokayukta Acts** but **with less strict provisions**.
- This Act is intended to **remove grievances of individual(s) against maladministration of government officials**.
- A **complaint** under this Act can be filed **either on the basis of an allegation** or on the **basis of the grievance**.

Lokpal and Lokayukta

- The **Lokpal and Lokayukta Act, 2013** provided for the **establishment of Lokpal for the Union and Lokayukta for States**.
 - **"India Against Corruption Movement"** led by **Anna Hazare put pressure** on the then government at the Centre and resulted in the **passing of the Lokpal and Lokayuktas Bill, 2013**, in both the Houses of Parliament.
 - It received **assent from the President on 1st January 2014** and **came into force on 16th January 2014**.
- These institutions are **statutory bodies without any constitutional status**.
- They perform the **function of an "ombudsman" and inquire into allegations of corruption** against certain public functionaries and for related matters.
- The term Lokpal and Lokayukta were coined by **Dr L. M. Singhvi**.
- **Data Analysis:** During his tenure, the office of the Lokayukta received 191 cases, 133 of which were disposed of. Among the 58 **pending cases are 21 in which he sent reports to the government**, but the **state government has not acted** and **Action Taken Reports** are still awaited.
 - **Pending Cases:** His **recommendations included** initiation of disciplinary action, transfer, probe into mishandled funds, misuse of powers of ministers and bureaucrats, detailed investigation by the Anti-Corruption Bureau or a declaration that an elected functionary is unfit to hold office.
- **Highlighted Challenges:**
 - **Overburdened:** Officials stalled preliminary enquiry

Note:

by avoiding registering an FIR and hence many cases went to Lokayukta because of that.

- To overcome it, he referred to the **Supreme Court's Lalita Kumari versus Government of Uttar Pradesh judgment (2013)** where the court has clearly said that whenever anyone comes to the police station and makes a complaint of a **cognisable offence** the police officer is bound to register an FIR, under the **Section 154 of Criminal Procedure Code (CrPC)**.
- **Lack of Governance:** His reports were indicative of the **lack of governance**, irrespective of any party of power of the day and highlighted **bureaucratic apathy and apathy of politicians**.
- **Less Powers:** The state act **does not have the powers of the prosecution** that the Karnataka and Kerala Acts have, **nor does it have a provision for contempt of the Lokayukta's orders**.
- **Inadequate Staff:** Lokayukta has an investigation wing in which police officers are supposed to be deputed however, it **lacked an adequate number of qualified personnel**.

Suggestions

- **Power of Prosecution:**
 - Under Section 17 of the Goa Lokayukta Act, the **power to prosecute should be given to the Lokayukta**.
 - It is there in Karnataka and Kerala acts but not present in Goa Act, where it is under 'initiation of Prosecution' and says that if the Lokayukta notices that an offence has been committed, then (s)he may pass an order and the appropriate authority "shall" initiate prosecution against the public functionary.
 - The **initiation of prosecution should not be left to the discretion** and the "shall" here means that the opinion of the Lokayukta is mandatory to be followed.
- **Power to Punish on Contempt:**
 - While making the rules, the Act **should have been included with the power to punish on contempt of the orders of Lokayukta**, which is still not available under the rules of the Act.
- **Increased Commitment:**
 - The **Act requires a retired Chief Justice or a retired Supreme Court judge to be appointed as the**

Lokayukta. It means, whoever comes and joins would have taken the oath twice and joining the Lokayukta office will be the third oath, **tripling the commitment**.

- (S)he must be **true to the oath and continue to be committed to discharging the duty without fear or favour, affection or ill will**.

National Startup Awards 2020

Why in News

Recently, the **results of the first edition of National Startup Awards (2020)** have been released by the **Ministry of Commerce and Industry**.

- The **Startup India Showcase** and **Blockchain-based Certificate Verification System** were also launched during the event.

Key Points

- **About the Startup Awards:**

- **Designed by:** Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
- **Aim:** To **recognize and reward outstanding startups and ecosystem enablers** that are building innovative products or solutions and scalable enterprises, with high potential of **employment generation or wealth creation**, demonstrating measurable **social impact**.
- **12 Sectors:** The awards invited applications across 12 sectors, which are Agriculture, Education, Enterprise Technology, Energy, Finance, Food, Health, **Industry 4.0**, Space, Security, **Tourism** and Urban Services.
 - Apart from these, startups were selected from those sectors which create an impact in **rural** areas, are **women-led** and are founded in **academic campuses** (3 special categories).
- **Prize:** The **winning startup founders** will get a cash prize of Rs. 5 lakh and an opportunity to present their solutions to relevant public authorities and corporates. **Incubators and accelerators** will get Rs. 15 lakh as the winning amount.
 - **A total of 38 startups were awarded**, one in each of the 35 categories and 3 special categories in the 12 sectors.

Note:



- **Startup India Showcase:**
 - It is part of the **Startup India** portal intended to be an online discovery platform for the most promising startups of the country.
 - The Government of India has initiated the **Startup India Scheme in 2016**.
 - The **startups showcased here shall be handpicked by experts** and will span across different sectors like **FinTech**, EdTech, Social Impact among others.
 - The showcase will **help industry, investors and public authorities find and connect with startups** for potential partnerships, investments and public procurement respectively.
- **Blockchain-based Certificate Verification System:**
 - It will **enable instant verification and access to certificates** of recognitions issued by DPIIT.
 - This feature introduces an **added layer of security to the startup certificates**.
 - It can be accessed by Government Departments, procurement entities, investors, and other third parties to verify the status of recognized startups for accessing different opportunities.
- **Other Releases:**
 - Results of the 2nd edition of **Ranking of States on Support to Startup Ecosystem** in which Gujarat performed best among all States by the DPIIT.
 - The **Ease of Doing Business Rankings of the States-2019**, by the DPIIT, in which Andhra Pradesh topped.
 - A **report related to startups** has been tabled in Parliament by the Parliamentary Standing Committee on Finance.

NCERT Books in Indian Sign Language

Why in News

Recently, the **Indian Sign Language Research and Training Centre (ISLRTC)** and the **National Council of Educational Research and Training (NCERT)** have signed a Memorandum of Understanding (MoU) to make NCERT textbooks accessible to hearing-impaired students in sign language.

Key Points

- **About the MoU:** NCERT textbooks, teachers' handbooks

and other materials for Class I-XII of all subjects in Hindi and English medium would be converted into **Indian Sign Language (ISL)** in digital format.

➤ Significance:

- It is a step towards fulfilling needs of the **Rights of Persons with Disabilities (RPWD) Act, 2016** and **New Education Policy, 2020**.
- The signing of this MoU is based on the **United Nations Children's Fund's (UNICEF) initiative, "Accessible Digital Textbooks for All"**.
- So far, hearing-impaired children used to study only through verbal or written medium but now they can study through **ISL which is the same all over the country**.
- In the **childhood days**, cognitive skills of children are developed and it is very necessary to **provide them with educational material as per their learning needs**.
 - It will not only enhance their vocabulary but also enhance their capabilities to understand concepts better.

➤ Indian Sign Language:

- Broadly, it's a **set of hand and facial gestures** used to communicate, most often by the hearing and speech impaired people.
- It has its own grammar, syntax and regional "dialects", essentially different gestures for the same word or sentiment.
- The **main difference from spoken languages** lies in the form as sign languages are visual whereas the spoken ones are auditory.
 - Sign language is recognised as an **official language** in many countries across the world, like the USA.

Report on Big Tech Companies

Why in News

Recently, a **US House of Representatives panel** submitted the **report of a bipartisan investigation** into the working of **big technology companies** like Amazon, Apple, Google and Facebook.

- It called for the **big technology companies to be broken up** and also for a **"presumptive prohibition against future mergers and acquisitions** by the dominant platform".

Note:

Key Points

➤ Background:

- These companies have **been on the government radar** in many countries for being big spenders and trying to steamroll competition by **either buying out their rivals or pushing vendors to avoid working** with their competitors.
- As part of reviewing the state of competition online, the US House panel **probed these companies and looked into how they controlled the flow of data** for themselves as well as their competition.

➤ Findings:

- Company **heads were questioned** over the evidence which suggested that the companies have exploited, entrenched and expanded their power over digital markets in anti-competitive and abusive ways and the **answers by the heads were often “evasive and non-responsive”**.
 - This aspect **raises questions on the powers assumed** by the big tech companies and whether they consider themselves beyond the reach of democratic oversight.
- Each of these companies **acts as a “gatekeeper” over a key channel of distribution**, which means that they have **full control over what goes on** in their respective domains.
 - By controlling access to markets, they **can pick winners and losers** throughout the economies.
- These companies **not only wield tremendous power, but also abuse it** by charging exorbitant fees, imposing oppressive contract terms, and extracting valuable data from the people and businesses that rely on them.
- Companies **ran the marketplace** for their respective domains, while also **competing in it** and to ensure they retain the number one position, the companies have **restored to “self-preferencing, predatory pricing, or exclusionary conduct”**.
 - **Self-preferencing** involves actions by an undertaking which are designed to favour its own products or services over those of its competitors.
 - **Predatory pricing** is an act of setting prices low in an attempt to eliminate the competition.
 - **Exclusionary conduct** is a conduct that creates or maintains monopoly power by disadvantaging and harming competitors.

➤ Recommendations:

- To push for **“structural separations”** of the big tech companies. These companies
- should be **broken into smaller companies** to ensure that they would not be able to have as much influence as they have currently over the digital marketplace.
- These companies should be **prohibited from operating** in an **“adjacent line of business”**.
 - Adjacent business is to leverage a business’s existing capabilities and apply them to a distinctly new market which is close in proximity to the existing business.
- There should be a **“presumptive prohibition”** against big tech companies going **for mergers and acquisitions**.
 - For example, Facebook bought Instagram and WhatsApp and has been accused of using money power to outright buy competition and then pushing them aggressively against other competitors.

➤ Impact of the Recommendations:

- Although the recommendations are **not legally binding** on either the USA government or any other agency, they have the **potential to start a debate and deeper research** in the direction of more controls by big tech giants.
- **Laws on vertical mergers and overriding problematic legal decisions can be rethought** and changed after the recommendations.
 - A vertical merger is the **merger of two or more companies that provide different supply chain functions for a common good or service**.
 - Vertical mergers are a way for companies to **significantly cut costs, increase profits, expand their market**, and turn their focus on bigger goals of improving their company.
- Big tech companies might not be directly impacted by these as of now, but there will be **increased scrutiny of regulators and probe agencies worldwide**.
- Companies are likely to **face more questions and probes from states** in the USA, which have been dragging them for not doing more to control their influence on day-to-day aspects of life.

Note:

Big Tech Influence in India

- The report also mentions the **role of the big tech companies in stifling competition in India**.
 - It refers to the various **antitrust probes going on against Google in India**, which has had run-ins with regulators, especially the **Competition Commission of India (CCI)**.
- In the last two years, the CCI has raised **issues with Google's commercial flight search option, its dominant position in the search marketplace, the abuse of its dominant position in the Android phone and smart television market**, and others.
 - In 2019, Google was held guilty of misuse of its dominant position in the mobile Android market for **imposing unfair conditions on device manufacturers to prevent them from using other operating systems**.
 - Google has also been accused of **following a high and unfair commission mechanism** for apps listed on its Play Store.
- **Amazon and Facebook**, which are trying to enter the retail space in India, are also **likely to be under the lens for the way they price their products** and the space they give/deny to their competition.

DST-IBM Collaboration for STEM

Why in News

Recently, the **Department of Science and Technology (DST)** and **International Business Machines Corporation (IBM)** India have announced **collaborations to scale up the initiatives, Vigyan Jyoti and Engage with Science**.

- Both DST and IBM India **aim to create a robust STEM ecosystem** that nurtures critical thinkers, problem-solvers, and next-generation innovators.
- DST and IBM India will **work together to further integrate and develop science and technology in the education ecosystem** with short term courses, workshops, mentoring, and online science content communication for teachers and students in India.

Key Points

- **Vigyan Jyoti:**
 - It was **launched by the DST in 2019**.
 - **Aim:**

- To promote **Science, Technology, Engineering, and Mathematics (STEM) learning** among girl students and build confidence and excitement towards these streams.
 - STEM is a **curriculum** based on the idea of educating students in 4 specific disciplines, science, technology, engineering and mathematics, in an interdisciplinary and applied approach.
- To create a **level-playing field** for meritorious girls from **grades 9 to 12**, especially from the top colleges in the areas where girls are hugely underrepresented.
- To solve the multidimensional problems associated with the **meagre representation of women**.
 - The programme provides a **scholarship, visit to nearby scientific institutions, science camps, lecturers** from eminent women scientists, and **career counselling**.
 - It is currently **implemented by Jawahar Navodaya Vidyalaya (JNV)** in 58 districts, with the participation of about 2900 students.
 - JNV is a **system of central schools for talented students predominantly from rural areas** in India.
 - They are run by **Navodaya Vidyalaya Samiti**, New Delhi, an **autonomous organization under the Department of School Education and Literacy**, Ministry of Education.
- **Engage with Science:**
 - Engage with Science by **Vigyan Prasar** is another initiative to **build interest and create a community of practice** with students, teachers, and scientists connecting the high school students to the higher education institutions.
 - **Vigyan Prasar** is an autonomous body under the DST to help India's science popularisation agenda through several strategic initiatives.
 - This is an **interactive platform** that will be built on the **Over-The-Top (OTT) platform** to encourage and inspire high school students to pursue science and technology for a career.
 - An OTT media service is **any online content provider that offers streaming media as a standalone product**.
 - The term is **commonly applied to video-on-demand platforms**, but also refers to audio

Note:

streaming, messaging services, or internet-based voice calling solutions.

- It needs **access to the internet and smartphones, tablets, laptop/computers.**

➤ **Benefits of the Collaboration:**

- It will make these programmes reach the students and teachers in **interactive ways on a large scale which will make learning relevant** and foster scientific spirit among the country's youth.
- **Existing opportunities** for meritorious girls to nurture their interest in STEM **will be expanded** through the learning platforms.
- The engagement with science platforms will **make students interact, participate and get involved with the sampling and active consumption of science and technology content**, including Cloud, Big Data, etc. through the usage of digital tools.
- This will **strengthen the DST's initiative to increase the number of women in technology** fields.

Hearing Impairment in India

➤ **Statistics:**

- According to the **World Health Organization (WHO)** in 2018, the prevalence of hearing impairment (HI) in India is around **6.3%** (63 million people suffering from significant auditory loss).
 - The estimated prevalence of **adult-onset deafness** in India is 7.6% and **childhood-onset deafness** is 2%.
- The larger percentage of the Indian population also suffers from **milder degrees of hearing loss and unilateral** (one-sided) hearing loss.
- **Nearly 50% of deafness can be prevented** if a primary health-care approach is adopted for **otological care** (care of ear and its diseases) across the world.

➤ **Initiative for Prevention:**

- **National Program for Prevention and Control of Deafness:** It was **launched in 2006** to tackle the high incidence of deafness in the country, in view of the preventable nature of this disability.
 - **Funding Pattern:**
 - **60:40** for all states except for the **North Eastern and the Himalayan States where it is 90:10.**
 - In the case of **Union Territories (UTs)**, Central funding is **100%** except for UTs with a legislature, where this ratio is **60:40.**

● **Objectives:**

- To prevent the avoidable hearing loss on account of disease or injury.
- Early identification, diagnosis and treatment of ear problems responsible for hearing loss and deafness.
- To medically rehabilitate persons of all age groups, suffering from deafness.
- To develop institutional capacity for ear care services by providing support for equipment and material and training personnel.

➤ **Other initiatives:**

- **Accessibility of news and educational videos** with the incorporation of sign language/or written text subtitles and transcripts.
- **Rights of Persons with Disabilities (RPWD) Act, 2016:** Includes provisions for hearing impaired people.
- **New Education Policy, 2020: Universalisation of education** (including disabled) from preschool to secondary level with **100% Gross Enrolment Ratio (GER)** in school education by **2030.**

Indian Sign Language Research and Training Centre

- It is an **autonomous** national institute of the **Department of Empowerment of Persons with Disabilities (DEPwD), Ministry of Social Justice and Empowerment.**
- It was **established in 2015.**
- **Objective:** It is dedicated to the task of developing man-power for popularising the use of ISL, teaching and conducting research in Indian Sign Language.

National Council of Educational Research and Training

- It is an **autonomous** organisation under the **Ministry of Education (MoE).**
- It acts as a **nodal agency** for achieving the goals of **Universalisation of Elementary Education.**
- **It is responsible for:**
 - Ensuring qualitative improvement in school education by undertaking and promoting research in areas related to school education.
 - Prepare and publish model textbooks, supplementary material.
 - Develop and disseminate innovative educational techniques and practices.

Note:

2nd Meeting of the Apex Council for Krishna and Godavari River Water Dispute

Why in News

The Centre will determine the jurisdictions of the **Krishna and Godavari river management boards (KRMB and GRMB)**, **Union Jal Shakti Ministry(MoJS)** announced at the **Apex Council Meeting**.

Key Points

- **Apex Council:**
 - It has been constituted by the Central Government under the provisions of **Andhra Pradesh Reorganisation Act (APRA), 2014**.
 - It supervises the functioning of the Godavari River Management Board and Krishna River Management Board.
 - **KRMB & GRMB** are autonomous bodies established as per **APRA-2014** under the administrative control of MoJS to manage and regulate the Waters of Krishna and Godavari Basin respectively in the states of Andhra Pradesh and Telangana.
 - It **comprises the Union Jal Shakti Minister and the Chief Ministers of** Telangana and Andhra Pradesh.
- **Apex Council Meeting:**
 - It was the **second** meeting since **2016**.
 - **Aim:** To resolve the conflict between the two States over executing irrigation projects and sharing water from the Krishna and Godavari rivers.
 - **Highlights of issues discussed:**
 - **Jurisdiction** of the KRMB and GRMB. Even after six years of their formation, their jurisdiction is still not notified because both the states have differing opinions on this issue.
 - Submission of **Detailed Project Reports (DPR)** of new projects in river basins by the two governments for appraisal and sanction by the **Apex Council**.
 - As per the APRA-2014, both KRMB and GRMB should technically appraise and clear them.
 - Establishing a **mechanism** to determine the share of Andhra Pradesh and Telangana in the Krishna and Godavari waters.

- **Shifting the headquarters** of the Krishna River Management Board to Andhra Pradesh as mandated by APRA-2014.

- **Decisions:**
 - The Centre will go ahead with notifying the jurisdiction of both KRMB & GRMB because as per the **APRA- 2014**, no consensus is needed.
 - Both States agreed to submit the DPRs of all the projects.
 - With regards to sharing of river waters, the Telangana Chief Minister agreed to withdraw the case filed in Supreme Court, to allow the Centre to refer water sharing issues to the **Krishna Godavari tribunal**.

Godavari River

- **Source:** Godavari river rises from Trimbakeshwar near Nasik in Maharashtra and flows for a length of about 1465 km before outfalling into the Bay of Bengal.
- **Drainage Basin:** The Godavari basin extends over states of Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh and Odisha in addition to smaller parts in Madhya Pradesh, Karnataka and Union territory of Puducherry.
- **Tributaries:** Pravara, Purna, Manjra, Penganga, Wardha, Wainganga, Pranhita (combined flow of Wainganga, Penganga, Wardha), Indravati, Maner and the Sabri.

Krishna River

- **Source:** It originates near Mahabaleshwar (Satara) in Maharashtra. It is the second biggest river in peninsular India after the Godavari River.
- **Drainage:** It runs from four states Maharashtra (303 km), North Karnataka (480 km) and the rest of its 1300 km journey in Telangana and Andhra Pradesh before it empties into the Bay of Bengal.
- **Tributaries:** Tungabhadra, Mallaprabha, Koyna, Bhima, Ghataprabha, Yerla, Warna, Dindi, Musi and Dudhganga.

Inter-State River Water Disputes

- **Article 262** of the Constitution provides for the adjudication of **inter-state water disputes**.
 - Under this, Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution and control of waters of any inter-state river and river valley.

Note:



- Parliament may also provide that neither the Supreme Court nor any other court is to exercise jurisdiction in respect of any such dispute or complaint.
- The Parliament has enacted the two laws, the **River Boards Act (1956)** and the **Inter-State Water Disputes Act (1956)**.
 - The **River Boards Act** provides for the **establishment of river boards** by the Central government for the regulation and development of inter-state river and river valleys.
 - A River Board is established on the request of state governments concerned to advise them.
 - The **Inter-State Water Disputes Act** empowers the Central government to set up an ad hoc tribunal for the adjudication of a dispute between two or more states in relation to the waters of an inter-state river or river valley.
 - The decision of the tribunal is final and binding on the parties to the dispute.
 - Neither the Supreme Court nor any other court is to have jurisdiction in respect of any water dispute which may be referred to such a tribunal under this Act.

Increased Election Campaign Broadcast Time

Why in News

Recently, the **Election Commission of India (ECI)** has increased the broadcast time allotted to recognised political parties on **Doordarshan and All India Radio** to aid campaigning for elections to the Legislative Assembly of Bihar, 2020.

Key Points

- **Broadcast Timings:** A **base time of 90 minutes** will be given to each national party and recognised state party of Bihar uniformly on the regional kendras of Doordarshan network and All India Radio network in Bihar.
 - **No party will be given more than 30 minutes** in a single broadcast session.
 - Any additional time (beyond the basic 90 minutes) will be given to a party based on its electoral performance in the last Assembly election in 2015.

- **Broadcast Period:** The period of broadcast will be **between the last date of filing nominations and two days before the date of polling** in Bihar.
 - The **Prasar Bharati Corporation** in consultation with the ECI will decide the actual date and time for broadcast and telecast.
 - Prasar Bharati is **India's largest public broadcasting agency**. It is a **statutory autonomous body set up by the Prasar Bharati Act, 1990** and comprises the **Doordarshan Television Network and All India Radio**, which were earlier media units of the Ministry of Information and Broadcasting.
 - The parties will be required to submit transcripts and recordings in advance.
- In addition to the broadcast by parties, the Prasar Bharati Corporation will organise a **maximum of four panel discussions and/or debates** on the Kendra/ Station of Doordarshan/ All India Radio.
 - Each eligible party can nominate one representative to such a programme.
- **Significance:** With the pandemic restricting movement and maintenance of safety for the people and party workers through **non-contact-based campaign**.
 - This can act as an experimental step to reduce the expenditure on physical campaigning.

Types of Parties

- The **Election Commission of India lists political parties** as "national party", "state party" or "registered (unrecognised) party".
- The conditions for being listed as a national or a state party are specified under the **Election Symbols (Reservation and Allotment) Order, 1968**.
- **Conditions for Recognized Parties:**
 - **National Party:**
 - 6% valid votes polled in any four or more states at a general election to the Lok Sabha or to the State legislative assembly; and, in addition, it wins four seats in the Lok Sabha from any state or states.
 - 2% of all Lok Sabha seats in the last such election, with MPs elected from at least three states.
 - Recognition as a state party in at least four states.
 - **State Party:**

Note:

- Two seats plus a 6% vote share in the last Assembly election in that state.
- One seat plus a 6% vote share in the last Lok Sabha election from that state.
- 3% of the total Assembly seats or 3 seats, whichever is more.
- One of every 25 Lok Sabha seats (or an equivalent fraction) from a state.
- An 8% state-wide vote share in either the last Lok Sabha or the last Assembly polls.

➤ **Loss of Recognised Status:**

- Once recognised as a national or a state party, a political party loses its given status only if it fails to fulfil any of the conditions for two successive Assembly and two successive Lok Sabha elections.
- That means a party retains that status irrespective of its performance in the next elections.

Ambedkar Social Innovation and Incubation Mission

Why in News

The **Ministry of Social Justice & Empowerment** has launched the '**Ambedkar Social Innovation and Incubation Mission (ASIIM)**' under **Venture Capital Fund for Scheduled Castes (SCs)** with a view to promoting innovation and enterprise among SC students studying in higher educational institutions.

Key Points

- **Major Objectives of the Mission:**
 - To **promote entrepreneurship among the SC Youth with special preference to Divyangs.**
 - To **support (1,000) innovative ideas till 2024** through a synergetic work with the **Technology Business Incubators (TBIs)** set up by the Department of Science and Technology.
- **Implemented By: Venture Capital Fund for SCs (VCF-SCs)** which was **set up in 2015-16** with the **Fund size of Rs. 500 Crore.**
 - Under this fund, **117 companies promoted by SC entrepreneurs** have been sanctioned **financial assistance** to set up business ventures.

➤ **Features:**

- **1,000 SC youth** would be identified in the **next 4 years** with start-up ideas through the **Technology Business Incubators (TBIs)** in various higher educational institutions.
- They **will be funded @ Rs. 30 lakhs in 3 years as equity (investment) funding** so that they can translate their start-up ideas into commercial ventures.
- Successful ventures would **further qualify for venture capital funding of up to Rs. 5 Crore** from the VCF-SCs.
 - **Venture capital** is a form of private equity and a type of financing that investors provide to startup companies and small businesses that are believed to have long-term growth potential.

➤ **Eligibility:**

- Youth who have been identified by the TBIs.
- Students who have been awarded under the **Smart India Hackathon** or **Smart India Hardware Hackathon** being conducted by the Ministry of Education.
- Innovative ideas focusing on the **socio-economic development** of the society identified in the TBIs.
- Start-ups nominated and **supported by corporates** through **Corporate Social responsibility (CSR)** funds.

➤ **Significance:**

- ASIIM under VCF-SC will promote innovation in the SC youth and would help them to **become job-givers from job-seekers.**
- It would further **give fillip to the 'Stand Up India'** initiative of the Prime Minister.

Kastoori Cotton

Why in News

Union Minister for Textiles unveiled a brand and a logo for **Indian cotton** recently on the occasion of 2nd **World Cotton Day** on 7th October 2020.

- The branding, **Kasturi Cotton**, would initially be applicable to long-staple cotton that is grown in India and meets prescribed standards.



Note:

Key Points

- **World Cotton Day:**
 - **2020 Theme:** Cotton: The Fibre that Moves Me
 - **Launched:** By **World Trade Organisation** in **2019** on the initiative of **Cotton-4 (Benin, Burkina Faso, Chad and Mali)**.
 - **In Collaboration with:** United Nations **Food and Agriculture Organization** (FAO), the **United Nations Conference on Trade and Development** (UNCTAD), the **International Trade Centre** (ITC) and the International Cotton Advisory Committee (ICAC).
- **Cotton:**
 - **Kharif Crop** which requires 6 to 8 months to mature.
 - **Drought – resistant** crop ideal for arid climates.
 - **Occupies 2.1%** of the world's arable land, meets **27%** of the world's textiles need.
 - **Temperature:** Between 21-30°C.
 - **Rainfall:** Around 50-100 cm.
 - **Soil Type:** Well-drained **black cotton soil (Regur Soil)** (E.g. Soil of Deccan Plateau)
 - **Products:** Fibre, oil and animal feed.
 - **Top Cotton Producing Countries:** China > India > USA
 - **Top Cotton Producing States in India:** Gujarat > Maharashtra > Telangana > Andhra Pradesh > Rajasthan.
 - **Four cultivated species** of cotton: *Gossypium arboreum*, *G. herbaceum*, *G. hirsutum* and *G. barbadense*.
 - *Gossypium arboreum* and *G. herbaceum* are known as **old-world cotton** or **Asiatic cotton**.
 - *G. hirsutum* is also known as **American cotton** or **upland cotton** and *G. barbadense* as **Egyptian cotton**. These are both **new world cotton species**.
 - **Hybrid Cotton:** Cotton made by crossing two parent strains that have different genetic characters. Hybrids are often spontaneously and randomly created in nature when open-pollinated plants naturally cross-pollinate with other related varieties.
 - **Bt Cotton:** It is a genetically modified pest-resistant variety of cotton.
- **Cotton in India:**
 - Cotton is an important **fibre and cash crop** which plays a dominant role in the industrial and agricultural economy of India.
 - India is the **2nd largest producer of cotton** in the

world and the **third largest exporter**. It is also the **largest consumer of cotton** in the world.

- The pest-resistant **Genetically Modified (GM) Bt cotton hybrids** have captured the Indian market (covering over **95%** of the area under cotton) since their **introduction in 2002**.
- India produces about 6 million tons of cotton every year which is about 23% of the world cotton.
- India produces about 51% of the **total organic cotton production** of the world.

Government Initiatives for Cotton

- **National Food Security Mission-Commercial Crops (NFSM-CC):**
 - In the **12th Five Year Plan**, under the **NFSM**, a cropping system approach was adopted by including commercial crops like cotton, jute and sugarcane.
 - Cotton Development Programme (CDP), launched in 2014-15, is being implemented under NFSM-CC for enhancing production and productivity.
- The Ministry of Textiles in collaboration with **Agricultural and Processed Food Products Export Development Authority (APEDA)** under the Ministry of Commerce and Industry has prescribed a **certification system for organic Cotton**.
- **Cotton Corporation of India (CCI)** has developed a mobile application called "**Cott-Ally**" to provide the latest news on weather conditions, the crop situation and best farm practices.

Cotton Corporation of India

- CCI was established in 1970 under the administrative control of the **Ministry of Textiles** as a **Public Sector Undertaking** under the **Companies Act 1956**.
- **HQ:** CBD Belapur, Navi Mumbai (Maharashtra)
- **Role:** To undertake price support operations, whenever the market prices of cotton fall below the **Minimum Support Prices (MSP)** announced by Govt. of India, without any quantitative limit.

Cotton Research

- The **Central Institute for Cotton Research** has campuses in Nagpur in Maharashtra state and Sirsa in Haryana state.
 - It is a central research institute established by the **Indian Council of Agricultural Research (ICAR)**.
- The **ICAR-Central Institute for Research on Cotton Technology** is situated in Mumbai.

Note:

- CCI has also opened 430 procurement centres in all cotton-growing states and payments are being made digitally to farmers' accounts within 72 hours.

Pulse Release from Buffer Stocks

Why in News

The Union government **plans to release 40,000 tonnes of tur dal** from its buffer stock into the retail market in small lots, in a bid to cool down the recent hike in pulses prices.

Key Points

- **Hiking Prices:**
 - Major **consuming centres** (Andhra Pradesh, Kerala, Maharashtra, Bihar and Tamil Nadu) of **urad and tur dal** have seen a **20% spike** in prices over the last two weeks alone.
 - These states have **expressed an interest in buying one lakh tonnes of pulses** from the Central buffer stock at the MSP rates to sell at subsidised prices.
 - At an all-India level, the **average retail prices of urad** have shot up **almost 40% in comparison to 2019**, while the **average retail prices of tur dal** have **increased by almost 24%**.
- **Retail Intervention:**
 - The **Department of Consumer Affairs (DoCA)** has introduced retail intervention, a mechanism to use the buffer stock of the **National Agricultural Cooperative Marketing Federation of India (NAFED)**.
 - NAFED procures pulses from farmers at **Minimum Support Price (MSP)** rates to moderate retail prices by supplying pulses to the States and the Union Territories.
 - The States are supplied pulses either in bulk or in retail packs for supply through the ration shops of the **Public Distribution System (PDS)**, or through milk and vegetable outlets run by the government or cooperatives.
 - For such retail intervention, **offer prices are fixed on the basis of MSP itself**.
 - This move will also help clear NAFED's existing stock to make way for procurement from this season's harvest, due to arrive in markets soon.

Using Open Market Sale:

- Apart from the retail intervention, the DoCA has also **decided to release 40,000 metric tonnes of tur from the buffer stock in Open Market Sale (OMS) Scheme** in small lots so that the releases may reach the retail market at a faster pace and help in cooling off rising prices.

Earlier Measures:

- The Centre extended the procurement window for its **Price Support Scheme (PSS) up to 90 days from the date of commencement** of the scheme in each State.
 - The PSS is **operationalised on the State governments' request** when the prices fall below the MSP.
- The Centre promised to provide **one kg of pulses per month to all families with ration cards for the three months** as part of a **Covid-19 relief package (Pradhan Mantri Garib Kalyan Yojana)**.

National Agricultural Cooperative Marketing Federation of India

- It is registered under the **Multi-State Cooperative Societies Act, 2002**.
- It was **set up in 1958** with the objective to **promote cooperative marketing of agricultural produce to benefit the farmers**.
- **Agricultural farmers are the members** of the General Body of NAFED, who participate in the decision-making process.

Minimum Support Price

- It is the **rate at which the government buys grains from farmers**.
- The reason behind the idea is to **counter the price volatility** of agricultural commodities **due to the factors like** variations in the supply, lack of market integration and information asymmetry.
- It is fixed on the recommendations of the **Commission for Agricultural Costs and Prices (CACP)**.

Open Market Sale Scheme

- **Food Corporation of India (FCI)** sells surplus stocks of wheat and rice at **predetermined prices through e-auction in the open market** from time to time to **enhance the supply** of food grains.
- It is done especially **during the lean season to moderate the open market prices** in the deficit regions.

Note:

Concerns Related to ART Bill, 2020

Why in News

Recently, the **Assisted Reproductive Technology (Regulation) Bill, 2020** has been introduced in the Lok Sabha.

Key Points

- **Assisted Reproductive Technology (ART):**
 - ART is **used to treat infertility**. It includes **fertility treatments that handle both a woman's egg and a man's sperm**. It works by removing eggs from a woman's body and mixing them with sperm to make embryos. The embryos are then put back in the woman's body.
 - **In Vitro fertilization (IVF)** is the most common and effective type of ART.
 - ART procedures **sometimes use donor eggs, donor sperm, or previously frozen embryos**. It may also **involve a surrogate carrier**.
- **Aim of the Bill:** To regulate ART banks and clinics, allow the safe and ethical practice of ARTs and protect women and children from exploitation.
- **Supplementary Status:**
 - It was introduced to supplement the **Surrogacy (Regulation) Bill, (SRB) 2019**, which **aims to prohibit commercial surrogacy** in India.
 - The Bill designates **surrogacy boards under the SRB to function as advisory bodies** for ART.

Concerns

- **Discrimination in Accessibility:**
 - The Bill **allows for a married heterosexual couple and a woman above the age of marriage** to use ARTs and **excludes single men, cohabiting heterosexual couples and LGBTQ+ individuals and couples** from accessing ARTs.
 - LGBTQ+ stands for **lesbian, gay, bisexual, transgender, queer** (or sometimes questioning), and others. The "plus" represents **other sexual identities** including pansexual, intersex, and asexual.
 - The Bill seems to **violate Article 14** of the Constitution and the **Right to Privacy jurisprudence**

of Puttaswamy, 2017, where the **Supreme Court** held that "the sanctity of marriage, the liberty of procreation, the choice of a family life and the dignity of being" concerned all **individuals irrespective of their social status** and were **aspects of privacy**.

- In **Navtej Singh Johar vs Union Of India (2018)**, States were advised to take positive steps for equal protection for same-sex couples.
- Unlike the SRB, there is **no prohibition on foreign citizens accessing the ARTs** but not all of the Indian citizens which is an illogical result which **fails to reflect the true spirit** of the Constitution.
- The Bill **restricts egg donation to a married woman with a child** (at least three years old). Even here, egg donation as an altruistic act is **possible only once a woman has fulfilled her duties** to the patriarchal institution of marriage.
- **Less or No Protection for Donors:**
 - The Bill does **little to protect the egg donor**. **Harvesting of eggs is an invasive process** which, if performed incorrectly, **can result in death**.
 - The Bill requires an egg donor's written consent but **does not provide for her counselling or the ability to withdraw** her consent before or during the procedure.
 - A woman receives **no compensation or reimbursement of expenses for loss of salary, time and effort**. **Failing to pay for bodily services constitutes unfree labour, which is prohibited by Article 23** of the Constitution.
 - The **commissioning parties only need to obtain an insurance** policy in her name for medical complications or death with **no amount or duration specified**.
- **Ambiguity in Disorders:**
 - The Bill requires **pre-implantation genetic testing** and where the **embryo suffers** from "pre-existing, heritable, life-threatening or genetic diseases", it **can be donated for research** with the commissioning parties' permission.
 - These **disorders are not specified** and the Bill **risks promoting an impermissible programme of eugenics**.
 - **Eugenics** is the practise or advocacy of improving the human species by selectively mating people with specific desirable hereditary traits.

Note:

- **Hides Information:**
 - Children born from ART **do not have the right to know their parentage**, which is crucial to their best interests and was protected under previous drafts.
- **Imbalance Between ART and SRB:**
 - Although the Bill and the SRB regulate ARTs and surrogacy, respectively, there is **considerable overlap** between both sectors and they **do not work in tandem**.
 - **Core ART processes are left undefined** and few of them are defined in the SRB but not in the Bill.
 - **Same offending behaviours** under both Bills are **punished differently** and sometimes with greater punishments under the SRB.
 - **Offences under the Bill are bailable but not under the SRB.**
 - Finally, **records** have to be maintained for **10 years under the Bill** but for **25 years under the SRB**.
- **Duplicacy:**
 - **Both Bills set up multiple bodies for registration** which will result in **duplication or worse, lack of regulation**. For example, a surrogacy clinic is not required to report surrogacy to the **National Registry**.
 - The National Registry will be established under the Bill and will act as a **central database with details of all ART clinics and banks** in the country.
- **Possible Gamete Shortage:**
 - **Gamete shortage** is likely to happen as there is no clarity on if **gametes** could be gifted between known friends and relatives now, which was not allowed earlier.
 - **Gametes** are an **organism's reproductive cells**. They are also referred to as **sex cells**. **Female gametes** are called **ova or egg cells**, and **male gametes** are called **sperm**.
- **Poorly Drafted:**
 - Further, Bill's **prohibition on the sale, transfer, or use of gametes and embryos is poorly worded** and will **confuse** foreign and domestic parents relying on donated gametes.
- **Enhanced Punishments:**
 - The SRB and the Bill impose **high sentences** (8-12 years) and **hefty fines**.
 - The poor enforcement of the **Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act**,

1994 demonstrates that enhanced punishments do not secure compliance.

SC on NCPCR's Repatriation Request

Why in News

The **Supreme Court** has sought a response from the **National Commission for Protection of Child Rights (NCPCR)**, to its request to eight States for immediate repatriation of children living in care homes with their families.

Key Points

- **Repatriation Request:** The NCPCR requested to Tamil Nadu, Andhra Pradesh, Telangana, Mizoram, Karnataka, Kerala, Maharashtra and Meghalaya for repatriation.
 - These States combinedly have 1.84 lakh children in care homes.
 - This accounts for over 70% of the children in care homes.
- **Judicial Activism:** The court is **suo motu** monitoring the condition and welfare of children placed in care homes across the country during the pandemic.
 - The active role of the judiciary, even in the executive or legislative sphere, for upholding the rights of citizens and preserving the constitution is known as judicial activism.
 - The court questioned if the NCPCR could issue such general directions to the States without considering the education, health, safety of the children, the consent of their parents and their economical situation.
- **On individual basis:** Repatriation ought to be considered on an individual basis for child safety.
 - As per **amicus curiae** ("friend of the court" - one who assists the court advice regarding questions of law or fact), the NCPCR direction violated the **Juvenile Justice Act of 2015** since the pandemic would make a child more vulnerable to domestic abuse.
 - The Juvenile Justice (Care and Protection of Children) Act, comprehensively addresses children in conflict with law and children in need of care and protection.

Note:



- As per the **Section 27(1) of the Act**, Child Welfare Committees (CWCs) are to be constituted by State Government by notification in the Official Gazette **for every district**, for exercising the powers and to discharge the duties conferred on such Committees in relation to children in need of care and protection under JJ Act, 2015.
- **NCPCR's Stand:** The NCPCR, suggested the need for a child to grow up in a familial environment.
 - Also, in an April 2020 order, the court had directed juvenile authorities to "proactively consider whether a child or children should be kept in the child care institutions considering the best interest, health and safety concerns".
- **Child Care Homes:** The children being taken in **child care homes**, are not only those who are orphans/abandoned children, but also children **hailing from downtrodden/financially unstable families**.
 - Therefore, if there is any child who is either being brought up by a single parent or comes from a family which is not able to bring up the child properly, then that child can avail all the facilities at a care home.
 - The facilities for children like individual bedding, proper nutrition and diet, toys, hygiene and maintenance of the CCI/Homes, sufficient water, health check-ups, educational facilities based on the age and special needs of the child.
 - All the children in these care homes are required to study in nearby government schools.

National Commission for Protection of Child Rights

- NCPCR is a **statutory body** set up in **March 2007** under the Commissions for Protection of Child Rights (CPCR) Act, 2005.
- It is under the **administrative control of the Ministry of Women & Child Development**.
- The Commission's mandate is to ensure that all laws, policies, programmes, and administrative mechanisms are in consonance with the child rights perspective as enshrined in the Constitution of India and also the UN Convention on the Rights of the Child.
- It inquires into **complaints** relating to a child's right to free and compulsory education under the **Right to Education Act, 2009**.
- It **monitors the** implementation of **Protection of Children from Sexual Offences (POCSO) Act, 2012**.

15 Years of RTI

Why in News

A report by the Satark Nagrik Sangathan and the Centre for Equity Studies has pointed out that **more than 2.2 lakh Right to information** cases are pending at the Central and State Information Commissions (ICs), which are the final courts of appeal under the RTI Act, 2005.

- The report was released on the occasion of completion of the 15 years of **Right to Information (RTI) Act**.

Key Points

- **Unavailability during Covid-19 lockdown:** Out of the total 29 ICs that were studied, 21 were not holding any hearings.
 - Even the websites of 3 ICs -Bihar, Madhya Pradesh and Nagaland -were not accessible during the **lockdown**.
 - Websites of 11 commissions out of 29, had no information/notification about the functioning of the IC during the lockdown.
- **Reduced Capacity:** Of the 29 ICs, two ICs -Jharkhand and Tripura -were found to have **no commissioners** for varying lengths of time. They were completely defunct.
 - 4 were functioning without a **Chief Information Commissioner** - Bihar, Goa, Rajasthan and Uttar Pradesh.
 - Under the RTI Act, **every commission should have a chief and up to 10 commissioners**.
- **Delays and Backlogs:** On average, the CIC takes 388 days (more than one year) to dispose of an appeal/complaint from the date that it was filed before the commission.
 - The **highest number of pending appeals**, with over 59,000 cases were in Maharashtra, followed by Uttar Pradesh and the Central Information Commission (CIC).
- **No Penalties: Government officials face hardly any punishment** for violating the law.
 - Penalties were imposed in only 2.2% of cases that were disposed of, despite previous analysis showing a rate of about 59% violations which should have triggered the process of penalty imposition.

Note:

Right to Information (Amendment) Act, 2019

- It provided that the Chief Information Commissioner and an Information Commissioner (of Centre as well as States) shall hold office for such **terms as prescribed by the Central Government**. Before this amendment, their term was fixed for 5 years.
- It provided that the **salary, allowances and other service conditions** of the Chief Information Commissioner and an Information Commissioner (of Centre as well as States) shall be such **as prescribed by the Central Government**.
 - Before this amendment, the salary, allowances and other service conditions of the Chief Information Commissioner were similar to those of the Chief Election Commissioner and that of an Information Commissioner were similar to those of an Election Commissioner (State Election Commissioners in case of States).
- It **removed the provisions regarding deductions in salary** of the Chief Information Commissioner, an Information Commissioner, the State Chief Information Commissioner and a State Information Commissioner due to pension or any other retirement benefits received by them for their previous government service.
- The **RTI (Amendment) Act, 2019** was **criticized on grounds of diluting the law and giving more powers to the central government**.

Central Information Commission

- **Established:** It was established by the Central Government in 2005, under the provisions of the Right to Information Act (2005). It is **not** a constitutional body.
- **Members:** A Chief Information Commissioner and **not more than ten Information Commissioners**.
 - At present (2019), the Commission has **six Information Commissioners** apart from the Chief Information Commissioner.
- **Appointment:** They are appointed by the **President** on the **recommendation of a committee** consisting of the Prime Minister as Chairperson, the Leader of Opposition in the Lok Sabha and a Union Cabinet Minister nominated by the Prime Minister.
- **Tenure:** The Chief Information Commissioner and an Information Commissioner shall hold office for such **terms as prescribed by the Central Government**

or until they attain the age of **65 years**, whichever is earlier.

- They are **not eligible for reappointment**.

➤ **Power and Functions of CIC:**

- It is the duty of the Commission to **receive and inquire into a complaint** from any person regarding information request under RTI, 2005.
- The Commission can **order an inquiry into any matter** if there are reasonable grounds (**suo-moto power**).
- While inquiring, the Commission has the **powers of a civil court** in respect of summoning, requiring documents etc.

Suggestions

- The government must ensure **the timely appointment of chiefs and members of ICs**.
 - The increasing backlog of cases is exacerbated by the fact that most Commissions are functioning at reduced capacity.
- It is absolutely critical that all information commissions conduct **timely and effective hearings and disposal** of cases to ensure people can exercise their fundamental right to information.
 - Commissions should hold hearings telephonically. Where possible, video calls can be set up.
- There should be a **prioritization of cases dealing with information related to life and liberty**. Information regarding matters like food distribution, social security, health and Covid-19-related issues should be proactively disclosed.
 - Section 7(1) of the RTI Act states that information concerning the life or liberty of a person has to be supplied **within 48 hours** of the request being received.
 - **Section 4** of the RTI Act requires **suo motu disclosure of information** by each public authority.
- **Urgent digitization** of records and proper record management is important as lack of remote access to records in the lockdown has been widely cited as the reason for not being able to conduct hearings of appeals and complaints by commissions.
 - Governments should put in place a mechanism for **online filing of RTI applications**.

Note:

National Postal Week and World Post Day

Why in News

India Post commenced the celebration of the **National Postal Week**, starting with **World Post Day** which is celebrated each year on **9th October**.

Key Points

- **National Postal Week:** It is celebrated from **9th to 15th October** every year.
 - **Aim:** Generating a broad awareness about India Post's role and activities among the public and media at the national level.
 - **Activities in 2020:** Felicitating the valued customers, organizing camps/workshops for Philately, opening accounts, online awareness campaigns etc.

Date	Day	Description
09.10.2020	Friday	World Post Day
10.10.2020	Saturday	Banking Day
12.10.2020	Monday	Postal Life Insurance Day
13.10.2020	Tuesday	Philately Day
14.10.2020	Wednesday	Business Development Day
15.10.2020	Thursday	Mails Day

- **Philately:** The collection and study of postage stamps and postal history.
 - In 2018, **Deen Dayal SPARSH (Scholarship for Promotion of Aptitude & Research in Stamps as a Hobby) yojana** was launched by the Ministry of Communications which gives **scholarships to promote philately among school children**.
- **World Post Day:** It is celebrated each year on **9th Oct**, to commemorate the establishment of the **Universal Postal Union (UPU)** in **1874** in the Swiss capital, Berne.
 - The Dat was declared by the UPU Congress held in Tokyo, Japan, in 1969.
 - **Purpose:** To create awareness about the role of the postal sector in the lives of people and business and its contribution to the social and economic development of the country.

Universal Postal Union

- The UPU is a **specialized agency of the United Nations (UN)** that coordinates postal policies among member nations, in addition to the worldwide postal systems.
- It is headquartered at **Berne, Switzerland**.

India Post

- India Post is the trade name for the Department of Posts (DoP), a government-operated postal system in India under the **Ministry of Communications**.
- With 1, 55,531 Post Offices, the DoP has the **most widely distributed postal network in the world**.
- **Functions:**
 - Delivering **mails**, accepting deposits under **Small Savings Schemes**, providing **life insurance cover** under Postal Life Insurance (PLI) and Rural Postal Life Insurance (RPLI) and providing **retail services** like bill collection, sale of forms, etc.
 - It also acts as an agent for the Government of India in discharging other services for citizens such as **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** wage disbursement and old age **pension** payments.
- **Significance:**
 - India Post has been serving the people in an extraordinary way in the difficult situation which has emerged due to **Covid-19**, by bringing them **medicines and financial assistance**.
 - The Postal Department has been playing a major role in the implementation of Government schemes, leveraging the **immense strength of its vast network**.
 - Postal schemes are known for providing **highly secured deposits**, they provide a **higher return of interest with low risk**.
- **Related News:**
 - The **Department of Posts** (Ministry of Communications) has launched a scheme called **Five Star Villages**. The scheme seeks to **bridge the gaps in public awareness and reach of postal products and services**, especially in interior villages.
 - The Prime Minister launched **India Post Payments Bank (IPPB)** on 1st September 2018 aimed at making **banking services available at people's doorstep**.
 - A **Customized My Stamp on India's First Anti Satellite Missile (A-SAT)** launch was released by the Department of Posts on the occasion of **Engineers' Day on 15th september, 2020**.

Note:

Corporatization of Ordnance Factory Board

Why in News

The Centre's move to corporatize the **Ordnance Factory Board (OFB)** has been strongly opposed by the trade unions.

Key Points

- **OFB:**
 - It is an **umbrella body for the ordnance factories** and related institutions, and is currently a **subordinate office of the Ministry of Defence (MoD)**.
 - The **first Indian ordnance factory** was set up in the year **1712** by the Dutch Company as a Gunpowder Factory, West Bengal.
 - It is a conglomerate of **41 factories, 9 training Institutes, 3 regional marketing centres** and **5 regional controllers of safety**.
 - **Headquarters:** Kolkata
 - **Significance:** A major chunk of the weapon, ammunition and supplies for not just armed forces but also paramilitary and police forces comes from the OFB-run factories.
 - **Production includes:** Civilian and military-grade arms and ammunition, explosives, propellants and chemicals for missile systems, military vehicles, armoured vehicles, optical devices, parachutes, support equipment, troop clothing and general store items.
- **Corporatization:**
 - In September 2020, an **Empowered Group of Ministers (EGoM)** for Corporatization was constituted under the chairmanship of the Defence Minister.
 - **Aim:** To oversee and guide the entire process, including transition support and redeployment plan of employees while safeguarding their wages and retirement benefits.
 - The corporatization will **result in the conversion of the OFB into (single or multiple) fully (100%) government-owned entity** under **the Companies Act, 2013** like other public sector undertakings.
- **Reasons for Corporatization:**

- A **performance evaluation** by the **Comptroller and Auditor General (CAG)** in its report for 2019 on the OFB highlights a few of the lacunae, which ails this organisation.
 - **Overheads** (expenses not directly attributed to creating a product or service) constitute a staggering 33% of the overall allotted budget for the year.
 - The major contributors being supervision costs and indirect labour costs.
 - **Delayed Production:** The Ordnance factories achieved production targets for only 49% of the items.
 - More than half the inventory (52%) was **store-in-hand**, procured for manufacture but not used within the year by the factories.
- The **Atmanirbhar Bharat initiative**, also calls for the Corporatisation of OFB for: '**improving autonomy, accountability and efficiency in ordnance suppliers**'.

➤ Apprehensions:

- One of the main apprehensions of the employees is that **corporatisation** (ownership and management lies with the government) **would eventually lead to privatisation** (transfer of ownership and management rights to the private player).
- The new corporate entities would not be able to survive the unique market environment of defence products that has very **unstable demand and supply dynamics**.
- Restructuring will result in greater autonomy and lesser government control over the corporation but there is a **fear of job loss**.

STARS Project

Why in News

The Union Cabinet has approved implementation of the **World Bank** aided- **Strengthening Teaching-Learning and Results for States (STARS) project** with a total project cost of Rs. 5,718 crore with the financial support of World Bank amounting to about Rs. 3,700 crore.

Key Points

- The STARS project would be implemented as a new **Centrally Sponsored Scheme** under the Department of School Education and Literacy, **Ministry of Education (MoE)**.

Note:

- **Aim and Focus:** These are aligned with the objectives of **National Education Policy (NEP) 2020** of **Quality Based Learning Outcomes**.
 - **Strengthening the government-managed school education system** that primarily caters to the educational needs of girls and students from marginalised groups.
 - Focus on initiatives of **PM e-Vidya**, **Foundational Literacy and Numeracy Mission** and **National Curricular and Pedagogical Framework for Early Childhood Care and Education** as part of the **Atmanirbhar Bharat Abhiyan**.
- **Features:**
 - **Key Areas:**
 - Access and retention;
 - Right to education entitlements;
 - Quality interventions;
 - Teacher education and training;
 - Gender and equity;
 - Inclusive education; and
 - Upgradation of the learning environment.
 - **Support for Participation in PISA:** India's participation in the 2022 cycle of the **Programme for International Student Assessment (PISA)** survey will also be funded by this project.
 - **PISA** was introduced in **2000** by the **Organisation for Economic Co-operation and Development (OECD)**.
 - It tests the learning levels of 15-year-old children in reading, mathematics, and science. The test is conducted every three years.
 - **India stayed away from PISA in 2012 and 2015** on account of its dismal performance in 2009, when it was placed 72nd among the 74 participating countries. The government decided to end the boycott in 2019.
- **Major Components:**
 - **At the national level:**
 - To strengthen the **national data systems** of the Ministry of Education (MOE) to capture robust and authentic data on retention, transition and completion rates of students.
 - To support the strengthening of **learning assessment systems**.
 - **PARAKH:** Establishment of **PARAKH (Performance Assessment, Review, and Analysis of Knowledge**

for Holistic Development) as a **National Assessment Centre**.

- Included in NEP, this **independent and autonomous** institution under the MOE will **set standards for the around 60 examination boards** in the country.
- **Contingency Emergency Response Component (CERC):** It will help the government respond to situations leading to **loss of learning** such as school closures/infrastructure damage, inadequate facilities and use technology for facilitating remote learning etc.
 - The CERC component would facilitate:
 1. The **rapid re-categorization of financing** (to provide flexibility in the crisis situation).
 2. The **utilization of streamlined financing** request procedures (so that delays in financing is eliminated).
- **At the State level:**
 - The project seeks to **improve education outcomes** and **school-to-work transition strategies** for better labour market outcomes in **6 states:** Himachal Pradesh, Rajasthan, Maharashtra, Madhya Pradesh, Kerala and Odisha.

DAY-NRLM Special Package for J&K and Ladakh

Why in News

Recently, the Union Cabinet has approved a **special package worth Rs. 520 crore** in the Union Territories (UTs) of Jammu and Kashmir (J&K) and Ladakh for a **period of five years** under the **Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM)**.

Key Points

- The decision is in line with **Centre's aim to universalise all centrally sponsored beneficiary-oriented schemes in J&K and Ladakh** in a **time-bound** manner.
- The package has been approved for a **period of five years till the financial year 2023-24** and it has been decided to ensure **funding on a demand-driven basis without linking allocation with poverty ratio** during the extended period.

Note:

- Around **two-third rural women** from the UTs will be covered and **10.58 lakh women will get the benefit** from the special package.
- The step was **based on the outcomes of an evaluation** pointing to the potential of the Mission to improve the quality of life of rural households and women empowerment under the changed circumstances in the UTs of J&K and Ladakh.

Deendayal Antyodaya

Yojana-National Rural Livelihood Mission

- It is a **centrally sponsored programme**, launched by the **Ministry of Rural Development** in **June 2011**.
- **Aim:**
 - To **eliminate rural poverty** through the **promotion of multiple livelihoods** and **improved access to financial services** for the **rural poor households** across the country.
 - To **reach out to all rural poor households** and **impact their livelihoods**.
- **Functioning:**
 - It involves **working with community institutions** through **community professionals in the spirit of self-help** which is a unique proposition of DAY-NRLM.
 - It impacts the livelihoods through **universal social mobilization by inter alia organising one-woman member from each rural poor household** into **Self Help Groups** (SHGs), their training and capacity building, facilitating their micro-livelihoods plans, and enabling them to implement their livelihoods plans through accessing financial resources from their own institutions and the banks.
- **Implementation:**
 - It is implemented in a **Mission mode by special purpose vehicles** (autonomous state societies) with **dedicated implementation support units** at the national, state, district and block levels, using **professional human resources** in order to provide **continuous and long-term handholding support** to each rural poor family.
- **Support Provided:**
 - There were **63 lakh SHGs comprising seven crore women members** in the country which had been **granted Rs. 3 lakh crore in loans** and the **non-performing assets** (NPA) amounted to **only 2.3%**.
 - The **outstanding loans** were to the tune of Rs. 1 lakh crore.

- The government **plans to take the scheme to 10 crore women**.

Gujarat's Disturbed Areas Act

Why in News

The **President has given his assent to a Bill passed by the Gujarat Assembly** in 2019, which made **some amendments** to the 'Gujarat Prohibition of Transfer of Immovable Property and Provisions of Tenants from Eviction from Premises in Disturbed Areas Act, 1991' - popularly known as the '**Disturbed Areas (DA) Act**'.

Key Points

- **About the Act:**
 - The Act was **first introduced in Ahmedabad** in 1986.
 - At that time, due to large scale and continuous riots in Ahmedabad city, a number of areas started witnessing distress sale of properties mainly by people of a particular community.
 - To check that, the then Gujarat government had brought in an ordinance. Later, it was converted into the DA Act in 1991.
 - Under the DA Act, a **District Collector can notify a particular area** of a city or town as a "**disturbed area**". This notification is generally done **based on the history of communal riots in the area**.
 - Following this notification, the **transfer of immovable property** in the disturbed area **can take place only after the Collector expressly signs off on an application** made by the buyer and the seller of the property.
 - In the application, the seller has to attach an **affidavit** stating that she/he has sold the property of her/his free volition, and that she/he has got a fair market price.
 - **Violation of the Act's provisions**, that is, if property in a notified disturbed area is transferred without the Collector's permission, **invites imprisonment and a fine**.
 - The state government claims it is **aiming to check communal polarisation of various parts** of the state through the Act.
 - The DA Act is **applicable in Ahmedabad, Vadodara, Surat, Himmatnagar, Godhra, Kapadvanj and Bharuch**.

Note:



➤ **Reasons for Amendment:**

- There were reports of **anti-social elements selling and buying properties** after either threatening people or luring them with higher prices, in areas marked as “disturbed”.
- It was reported that at times, anti-social elements had **got transfers done even without the Collector’s prior permission** by getting the transfer deed registered under the provisions of the Registration Act, in which the Collector’s prior sanction under the DA Act was not required.
 - This had resulted in clustering or polarisation of localities.
- To plug such loopholes, and to **increase the punishment for the violation of the Act as deterrence**, the amendment Bill was presented and passed in the Gujarat Assembly in July 2019.

➤ **Amendments:**

- **More Powers to the Collector:** To ascertain if there is a likelihood of “polarisation” or “improper clustering” of persons belonging to a particular community, thus disturbing the demographic equilibrium in the area.
 - For probing these aspects, the **formation of a Special Investigation Team (SIT)** has also been envisaged.
- **Review Power to the State:** The state govt is authorised to review a decision taken by the Collector.
- **Advisory Committee:** Enables the state government to form an advisory committee that will advise it on various aspects of the DA Act, including adding new areas to the ‘disturbed areas’ list.
- **Disturbed Area:** The government **can notify any area as a ‘disturbed area’ where it sees the possibility of a communal riot**, or where it sees the possibility of a particular community’s polarisation.
- **Strict Provisions:**
 - To check the registration of transfer of properties in disturbed areas without the Collector’s prior approval, the amended Act has a provision to **enlarge the scope of the term ‘transfer’**, and include transfer of right, title or interest in or over such property in disturbed areas by way of sale, gift, exchange, and lease.
 - The Act has **amended the Registration Act** under which no property in disturbed areas can be registered without prior sanction of the Collector.

- **Redevelopment of the Property** is allowed only if it is for the owner’s purpose. But if the owner is planning to bring new people on the redeveloped property, she/he has to take the permission of the Collector.

- **Non-Applicability:** The provisions of the Act will not be applicable to the **government’s rehabilitation schemes** in a disturbed area, where it resettles displaced people.
- **Penal Provisions:** The amendment has **increased the punishment to imprisonment between three and five years**. The **fine** has also been **increased to Rs. 1 lakh, or 10% of the jantri rate** (ready reckoner of property prices in different parts of the state) of the property, **whichever is higher**.
 - The punishment for the violation of the Act was earlier imprisonment for six months and fine up to Rs.10,000.

AMRUT Mission

Why in News

Uttarakhand and **Himachal Pradesh** have been appreciated for the progress made under AMRUT Mission (**Atal Mission for Rejuvenation and Urban Transformation**).

- Both the states were also requested to initiate activities under the “**Catch the Rain**” campaign. The **objective** of this campaign is to **conserve/harvest every drop of water**.
 - This campaign **incorporates rainwater harvesting** in all the structures of the cities.

Key Points

➤ **About the AMRUT Mission:**

- **Launch:** June 2015
- **Concerned Ministry:** Housing and Urban Affairs
- **Purpose:**
 - To ensure that **every household has access to a tap** with the assured supply of water and a **sewerage connection**.
 - The **Priority zone of the Mission** is water supply followed by sewerage.
 - To increase the **amenity value of cities** by developing greenery and well maintained open spaces (e.g. parks).

Note:



- To **reduce pollution** by switching to public transport or constructing facilities for non-motorized transport (e.g. walking and cycling).
- **Components:**
 - Capacity building, reform implementation, water supply, sewerage and septage management, storm water drainage, urban transport and development of green spaces and parks.
 - The **reforms** aim at improving delivery of citizen services, bringing down the cost of delivery, improving financial health, augmenting resources and enhancing transparency. It also includes **replacement of street lights with LED lights**.
- **Central Sponsored Scheme:** Total outlay for AMRUT was Rs. 50,000 crores for five years from FY 2015-16 to FY 2019-20.
 - Unable to meet set targets for urban renewal in 500 cities, the Centre has **extended the mission period of AMRUT upto 31st March, 2021**.
- **State Annual Action Plan (SAAP):**
 - AMRUT has made states equal partners in planning and implementation of projects by approval of SAAP once a year by MoHUA and states have to give project sanctions and approval at their end, therefore actualisation of **cooperative federalism**.
- **Supervision:** An Apex Committee (AC), chaired by the Secretary, MoHUA and comprising representatives of related Ministries and organisations supervises the Mission.
- **Status of AMRUT Mission in Uttarakhand and Himachal Pradesh:**
 - Himachal Pradesh is ranked 15th and Uttarakhand 24th in AMRUT's National rankings (performance-based).
 - Odisha topped the rankings.
 - Both the States have implemented the **Online Building Permission System (OBPS)** in their Mission cities.
 - OBPS is a part of '**Ease of Doing Business**' and should be implemented in all the Urban Local Bodies (ULBs) apart from Mission cities.
 - The **Credit Rating work** has been completed in all Mission cities in the two States.
 - Credit rating is an assessment of an ULB's ability to pay its financial obligations.
 - Both the States were informed that the Ministry

has developed a **common Dashboard** for all the Missions (e.g. **Pradhan Mantri Awas Yojana - Urban, Smart Cities Mission**) of the Ministry where information relating to all States/UT and cities would be available. The States/UT may use this facility for **monitoring the progress**.

- States were requested to update the details of Missions regularly so that the progress would be updated in the portal/dashboard. This data is used for monitoring, reviewing and assessment of monthly rankings on the progress among the states.

Sovereign Gold Bond Scheme

Why in News

A **seventh tranche** of the gold bond scheme - in which the **Reserve Bank of India (RBI)** issues bonds linked to the market price of gold on behalf of the government - will be available for investment on five days starting 12th October, 2020.

Key Points

- **Launch:** The Sovereign Gold Bond (SGB) scheme was **launched in November 2015** with an **objective** to reduce the demand for physical gold and shift a part of the domestic savings - used for the purchase of gold - into financial savings.
- **Issuance:** The Gold Bonds are issued as Government of India Stock under the **Government Securities (GS) Act, 2006**.
 - These are **issued by the RBI on behalf of the Government of India**.
 - Bonds are **sold through** Commercial banks, Stock Holding Corporation of India Limited (SHCIL), designated post offices (as may be notified) and recognised stock exchanges viz., National Stock Exchange of India Limited and Bombay Stock Exchange, either directly or through agents.
- **Eligibility:** The bonds are restricted for sale to **resident individuals, Hindu Undivided Families (HUFs), trusts, universities and charitable institutions**.
- **Features:**
 - **Issue Price:** The price of the gold bonds is calculated based on the spot price of gold as provided by the Mumbai-based India Bullion and Jewellers Association (IBJA).

Note:

- For the **seventh tranche**, a price of Rs. 5,051 per unit is applicable. Those **purchasing the bonds through an online mode** - using a digital mode of payment - get a **discount of Rs. 50 on each unit**.
- **Investment Limit:** Gold bonds can be **purchased in the multiples of one unit**, up to certain thresholds for different investors.
 - The **upper limit** for retail (individual) investors and HUFs is 4 kilograms (4,000 units) each per financial year. For trusts and similar entities, an upper limit of 20 kilograms per financial year is applicable.
 - **Minimum permissible investment is 1 gram of gold.**
- **Term:** The gold bonds come with a **maturity period of eight years**, with an **option to exit the investment after the first five years**.
- **Interest Rate:** A fixed rate of **2.5% per annum** is applicable on the scheme, payable **semi-annually**.
 - The interest on Gold Bonds **shall be taxable** as per the provision of Income Tax Act, 1961.
- **Benefit:**
 - Bonds can be used as **collateral for loans**.
 - The **capital gains tax** arising on redemption of SGB to an **individual** has been **exempted**.
 - Redemption is the act of an issuer repurchasing a bond at or before maturity.
 - Capital gain is the profit earned on the sale of an asset like stocks, bonds or real estate. It results in when the selling price of an asset exceeds its purchase price.

Status of Bharatmala Pariyojana

Why in News

A total of 322 projects in a length of 12,413 km have been awarded and 2921 km has been constructed under **Bharatmala Pariyojana** till August 2020.

Key Points

- Bharatmala Pariyojana is an **umbrella program for the highways sector** envisaged by the **Ministry of Road Transport and Highways**.
- Under **Phase-I of Bharatmala Pariyojana**, implementation of **34,800 km of national highways in 5**

years (from 2017 to 2022) has been approved at an estimated outlay of **Rs. 5,35,000 crore**.

- **National Highways Authority of India (NHAI)** has mandated the development of about 27,500 km of national highways under Phase-I.
- However, as per **ICRA Limited**, Phase-I is **likely to be delayed** by four years due to the prevailing **uncertainty due to Covid-19** and **consequent impact on valuations**.
 - ICRA Limited is an **Indian independent and professional investment information and credit rating agency**.
- **Phase-II** envisages around **48,000 km of road network across India by 2024**.
- **Objectives:**
 - To **optimise the efficiency of freight and passenger movement** across the country by bridging critical infrastructure gaps through effective interventions.
 - The **effective interventions** include the development of economic corridors, inter corridors and feeder routes, national corridor efficiency improvement, border and international connectivity roads, coastal and port connectivity roads and greenfield expressways.
 - **Economic Corridors:** These are **integrated networks of infrastructure** within a geographical area designed to **stimulate economic development**.
 - **Greenfield Projects:** They **lack constraints imposed by prior work on the site**. Typically, it entails **development on a completely vacant site** and architects start completely from scratch.
 - **Brownfield Projects:** They carry **constraints related to the current state of the site and might be contaminated or have existing structures** that architects have to tear down or modify in some way before the project can move forward.
 - To **generate a large number of direct and indirect employment opportunities** in the construction and infrastructure sector and also as part of the enhanced economic activity resulting from better road connectivity across the country.
 - To **connect 550 districts in the country** through national highway linkages.

Note:

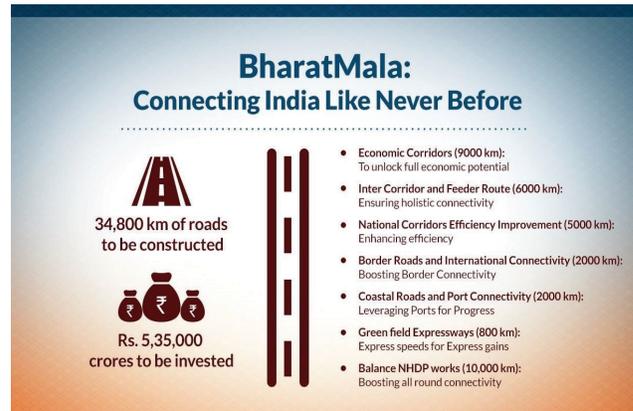


➤ **Features:**

- **Improvement in the efficiency of existing corridors** through the development of **Multimodal Logistics Parks** and elimination of chokepoint.
 - Multimodal Logistics Parks are a key **policy initiative** of the Government of India to **improve the country's logistics sector** by lowering overall freight costs, reducing vehicular pollution and congestion, and cutting warehousing costs.
 - A chokepoint is a single point through which all incoming and outgoing network traffic is funnelled and hence, leads to congestion and traffic.
- Enhance focus on **improving connectivity in North East** and **leveraging synergies with Inland Waterways**.
- Emphasis on the use of **scientific and technological planning** for Project Preparation and Asset Monitoring.

- **Satellite mapping of corridors** to identify up-gradation requirements.
- **Delegation of powers to expedite project delivery** for successful completion of Phase I by 2022.

➤ **Project Categories:**



drishti

Note:



drishti

Economic Scenario

Highlights

- *Reforms in Exploration and Licensing Policy: Oil & Gas*
- *Round the Clock RTGS Facility*
- *GDP Revival Forecast: RBI*
- *Contraction in GDP of India in 2020-21: World Bank*
- *Measures to Boost Consumption Demand and Capex*
- *India's Public Debt Ratio*
- *Contraction in August Core Industry Output: IIP*

Reforms in Exploration and Licensing Policy: Oil & Gas

Why in News

The **Cabinet Committee on Economic Affairs** (CCEA) chaired by the Prime Minister has approved the **Policy framework** on reforms in the exploration and licensing sector for enhancing domestic exploration and production of oil and gas.

Key Points

- **Objectives:**
 - Attract new **investment** in Exploration and Production (E&P) Sector.
 - Intensification of **exploration** activities in unexplored areas.
 - **Liberalizing** the policy in producing basins.
- **Four Focus Areas:**
 - **Increasing Exploration Activities in Unexpected Areas:**
 - Bidding out **uncommercialized basins** to contractors without them having to share revenue or production with the Government and only paying royalties/levies.
 - For **unallocated/unexplored areas**, the bidding to be based on a revenue-sharing basis but more weightage to work programme to be given.
 - Shorter exploration period and **fiscal incentives**.
 - **Marketing and Pricing Freedom:**
 - To incentivize enhanced gas production, marketing and pricing freedom to be granted

for those new gas discoveries whose **Field Development Plan (FDP)** is yet to be approved.

- FDP is the evaluation document of multiple development options for a field and selecting the best option based on assessing tradeoffs.
- **Fiscal incentive on additional gas production** from domestic fields over and above normal production.
- **Preparation of Enhanced Production Profile:**
 - Public sector Undertakings like **Oil and Natural Gas Corp (ONGC)** and **Oil India Ltd (OIL)** will prepare an enhanced production profile to enhance production from their existing fields.
 - For production enhancement, bringing new technology, and capital, No Objection Certificates (NOCs) will be allowed to **induct private sector partners**.
- **Promoting Ease of Doing Business:**
 - Measures like setting up coordination mechanism and simplification of approval, alternate dispute resolution mechanism etc. to be taken.
- **Background:**
 - **Domestic production of oil and gas was declining, import dependence was rising and investment in E&P activities was reducing.** Thus, policy reform in this sector was needed.
 - Earlier, the government between 2016 and 2019 had given pricing freedom for all fields except those given to state-owned ONGC and OIL on a nomination basis.
 - But, there were **restrictions on marketing** like a ban on affiliates of producers buying the fuel etc. This **restricted competition** kept **prices artificially low**.

Note:



- The **Hydrocarbon Exploration and Licensing Policy or HELP** was approved in March 2016, aimed at increasing the transparency and decreasing the administrative discretion in granting hydrocarbon licenses. It replaced the **New Exploration Licensing Policy (NELP), 1997**.
- Recently, India also launched its first gas exchange which has been named as the **Indian Gas Exchange (IGX)**.
- **Benefits:**
 - Development of support services.
 - Employment generation.
 - Transfer of advanced technology.
 - Reducing import dependence.
 - Improve **energy security** of the country.
 - Save the precious foreign exchange on imports.

Petroleum

- Crude petroleum occurs in **sedimentary rocks** of the tertiary period.
- It consists of **hydrocarbons of liquid and gaseous states** varying in chemical composition, colour and specific gravity.
- It is an essential source of energy for all internal combustion engines in automobiles, railways and aircraft.
- Its numerous by-products are processed in petrochemical industries such as fertiliser, synthetic rubber, synthetic fibre, medicines, vaseline, lubricants, wax, soap and cosmetics.
- Venezuela, Saudi Arabia, Canada, Iran, Iraq, Kuwait, Russia are some **major countries with the largest oil reserves**.
- Digboi, Naharkatiya and Moran in **Assam**, Ankleshwar, Kalol, Mehsana, Navagam, Kosamba and Lunej in **Gujarat**; Mumbai High in **Maharashtra** are important **oil-producing areas in India**.

Natural Gas

- Natural gas is found with petroleum deposits and is released when crude oil is brought to the surface. It can be used as a domestic and industrial fuel.
- **Russia, Norway, UK and the Netherlands** are the major producers of natural gas.
- In **India**, Jaisalmer, Krishna Godavari delta, Tripura and some areas offshore in Mumbai have natural gas resources.

- The **Gas Authority of India Limited** was set up in 1984 as a public sector undertaking to transport and market natural gas.

Oil and Natural Gas Corporation

- ONGC is a **Maharatna** Public Sector Undertaking (PSU) of the Government of India.
- It was set up in 1995 and is under the **Ministry of Petroleum and Natural Gas**.
- It is the **largest crude oil and natural gas company in India**, contributing around 70% to Indian domestic production.

Round the Clock RTGS Facility

Why in News

The **Real Time Gross Settlement System (RTGS)**, used for large value transactions, will be made **available round-the-clock from December 2020**.

Key Points

- **RTGS:**
 - It enables **real-time transfer of funds** to a beneficiary's account and is primarily meant for large-value transactions.
 - **Real time** means the **processing of instructions at the time they are received** and **gross settlement** implies that **settlement of funds transfer instructions occurs individually**.
- **Current Scenario:** RTGS is available for customers from 7.00 a.m. to 6.00 p.m. on all working days of a week, except second and fourth Saturdays of every month.
- **24x7x365 RTGS Decision:** The **Reserve Bank of India (RBI)** has decided to make available the RTGS system round the clock on all days from December 2020 in order to **facilitate swift and seamless payments in real-time** for domestic businesses and institutions.
 - In **December 2019**, the **National Electronic Funds Transfer (NEFT)** system was made available on a **24x7x365 basis**.
 - From July 2019, **RBI stopped levying charges on transactions through NEFT and RTGS**, with an aim to **promote digital transactions** in the country.
- **Significance:**
 - This will **facilitate innovations** in the large value payments ecosystem and promote **ease of doing business**.

Note:



- This will help in **global integration of Indian financial markets** and will facilitate India's efforts to develop **international financial centres**.
- With this, **India will be one of the very few countries globally** with a 24x7x365 large value real time payment system.
- **RTGS vs NEFT:**
 - **Use:** RTGS is meant for **large-value instantaneous fund transfers** while **NEFT** is generally used for **fund transfers of up to Rs. 2 lakh**.
 - The **minimum amount** to be remitted through RTGS is **Rs. 2,00,000 with no upper or maximum ceiling**.
 - There is **no limit imposed by RBI** for funds transfer through NEFT system. However, **banks may place amount limits** based on their own risk perception with the approval of its board.
- **Mechanism:**
 - **NEFT** is an electronic fund transfer system in which the transactions received up to a particular time are **processed in batches**.
 - Contrary to this, in RTGS, the **transactions are processed continuously on a transaction by transaction basis** throughout the RTGS business hours.

GDP Revival Forecast: RBI

Why in News

Recently, the **Monetary Policy Committee** of the **Reserve Bank of India (RBI)** has announced the **extension of its accommodative policy stance** for the rest of this year as well as 2021-22 and forecasted a **Gross Domestic Product (GDP)** revival in coming months.

- RBI had previously introduced a number of measures in its **Monetary Policy Report** for dealing with the **Covid-19** induced economic setback.

Key Points

- **Decisions:**
 - RBI has kept **key policy rates unchanged** to **revive growth** of the economy and **mitigate the economic impact of Covid-19** pandemic.
 - The **Repo and reverse repo rate unchanged** at 4% and 3.35% respectively because of **high inflation**.

- **Risk weights**, i.e, the capital required to be set aside on individual home loans, have been relaxed and the **loan limit** for retail and small business borrowers have been raised.
 - This would give a boost to the **job-intensive real estate sector** that has been suffering in the pandemic.
- **Real-Time Gross Settlement (RTGS)** will be available round the clock.
- **Targeted Long Term Repo Operations (TLTRO)** of Rs. 1,00,000 crore for the revival of specific sectors, and **Open Market Operations (OMOs)** for **State Development Loans (SDLs)** have been announced.
 - This will assure market participants of **access to liquidity and easy finance conditions**.
 - LTRO is a mechanism to **facilitate the transmission of monetary policy** actions and the flow of credit to the economy. This helps in **injecting liquidity in the banking system**.
 - OMO is one of the **quantitative** monetary policy tools which is **employed by the central bank of a country to control the money supply in the economy**.
 - OMOs are conducted by the RBI by way of **sale or purchase of government securities (g-secs)** to adjust money supply conditions.
 - The central bank sells g-secs to commercial banks to remove liquidity from the system and buys back g-secs to infuse liquidity into the system.

Forecasts:

- **GDP Revival:**
 - Real GDP in FY21 will fall by 9.5%.
 - GDP growth may break out of contraction and **enter a positive zone by Q4** of the current fiscal year (2020-21)
 - Starting from a modest recovery, the economic activity is expected to gain traction in Q3.
 - The real GDP growth in 2020-21 is expected to be negative at -9.8% in Q2 of 2020-21, -5.6% in Q3 and 0.5% in Q4.
 - Real GDP is likely to grow by 20.6% in the Q1 of 2021-22.

Governor's prescription

A look at some of the key announcements made by the RBI

• Repo rate will remain unchanged at 4%

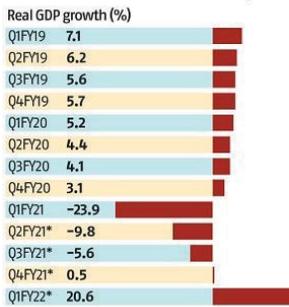
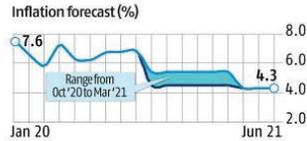
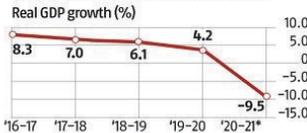
• Accommodative stance towards growth will be extended to next year

• Risk weightages for home loans have been rationalised to spur job-intensive realty sector

• Real Time Gross Settlement payment system to go 24/7 from December 2020

PROJECTION
GDP to contract by **9.5%**, with positive growth likely in Q4

Note:

GDP TO RECOVER IN MARCH QTR**INFLATION TO MODERATE SLOWLY****COVID TO WORSEN SLOWDOWN**○ **Decline in Inflation:**

- Inflation is expected to decline in the next 3 months and is likely to ease to the projected target of around 4% (within a band of +/- 2%) by Q4 of FY'21.
- **Supply chain disruptions** is the major factor driving up inflation. As supply chains are restored, the inflation would come down.
- The **retail inflation growth was 6.69%**, as of **August 2020**.

○ **Restart of Economy:**

- The economy is likely to witness a three-speed recovery i.e. individual sectors showing varying paces with **fastest, modest and slowest** recovery rates.
- Apart from agriculture, sectors such as fast-moving consumer goods, automobiles, pharma and power would revive first.

Monetary Policy Committee

- It is a **statutory and institutionalized framework** under the **Reserve Bank of India Act, 1934**, for maintaining price stability, while keeping in mind the objective of growth.
- The **Governor of RBI is ex-officio Chairman** of the committee.
- The committee comprises **six members** (including the Chairman), three officials of the RBI and three external members nominated by the Government of India.
- Decisions are **taken by majority with the Governor having the casting vote** in case of a tie.
- The **MPC determines the policy interest rate** (repo rate) required to achieve the inflation target (4%).
- An **RBI-appointed committee led by the then deputy governor Urjit Patel in 2014 recommended** the establishment of the Monetary Policy Committee.

Repo Rate and Reverse Report Rate

- It is the **rate at which the central bank of a country (RBI in case of India) lends money to commercial banks in the event of any shortfall of funds.**
- It is **used by monetary authorities to control inflation.**
 - In the event of inflation, central banks increase the repo rate as this acts as a disincentive for banks to borrow from the central bank. This ultimately reduces the money supply in the economy and thus helps in arresting inflation.
 - The central bank takes the contrary position in the event of a fall in inflationary pressures.
- Ideally, a low repo rate **should translate into low-cost loans for the general masses.** When the RBI slashes its repo rate, it expects the banks to lower their interest rates charged on loans.
- **Reverse repo rate** is the rate at **which the RBI borrows money from commercial banks within the country.**

Contraction in GDP of India in 2020-21: World Bank**Why in News**

Recently, the **World Bank** released its **South Asia Economic Focus report** which estimated that India's **Gross Domestic Product (GDP)** can contract **by 9.6% in 2020-21.**

- This estimate is way below the earlier forecast of 3.2% contraction, made in June.

Key Points

- **Contraction of Indian Economy in 2020-21**
 - The contraction is due to the impact of the **national lockdown** against the outbreak of the **Covid-19 pandemic** and the **income shock** experienced by households and small urban service firms.
 - The **manufacturing and exporting industries** are likely to be depressed, and the **construction** sector is also likely to experience a protracted slowdown.
 - This is due to a **limited pipeline of public sector infrastructure projects** and reliance of these industries on **migrant workers** who have not yet returned to cities where they worked.

Note:

- Significant disruptions to jobs are likely to boost the **poverty rate**, with 2020 rates back to levels in 2016.
 - The **biennial Poverty and Shared Prosperity Report** was recently released by the World Bank which stated that Covid-19 can add around 27-40 million **new poor** in **Sub-Saharan Africa** and around 49-57 million in **South Asia** region, causing over 1.4% of the world's population to fall into **extreme poverty**.
- The demand slowdown could lead to **rising loan non-repayment** and **risk aversion** impacting the financial markets.
- Other concerns include **health care system capacity constraints, rising food prices, sharp drops in earnings of informal workers, impact on the MSMEs** etc.
- **South Asian Scenario:**
 - The **entire South Asia region** may face its **worst-ever recession**.
 - The regional GDP is estimated to contract by 7.7% in 2020, which stayed above 6% annually in the past five years.
 - This recession will be **different from previous ones** as earlier downturns were mainly due to **falling investment and exports** but this pandemic-induced recession is due to a **decline in private consumption**.
 - **Private consumption**, which has been traditionally the backbone of demand in South Asia and a core indicator of economic welfare, will **decline by more than 10%**. This will **spike poverty rates**.
 - A **decline in remittances** is also expected to accelerate the loss of livelihoods for the poorest in some countries.
 - **Other South Asian Countries:** Countries like the Maldives, Sri Lanka are going to see a contraction in their economies while Pakistan, Bangladesh, Bhutan will witness slow growth in 2020-21.
 - The collapse of South Asian economies during Covid-19 has been the worst of all for **small businesses and informal workers** who suffer sudden job losses and vanishing wages.
- **Rebound of Economy in 2021-22**
 - India's growth is estimated to **rebound to 5.4%** in 2021-22.
 - However, this will be reflecting base effects and are based on the assumption that Covid-related restrictions will be completely lifted by 2022.
 - **Base Effect:** It is the distortion in a monthly inflation figure that results from abnormally high or low levels of inflation in the year-ago month.
- South Asia's growth is projected to rebound to 4.5% in 2021.
 - However, due to population growth, per-capita income in the region will remain 6% below 2019 estimates.
- The expected **rebound will not offset the lasting economic damage** caused by the pandemic.
- However, the pandemic could spur innovations that improve South Asia's future participation in global value chains.
 - The **Supply Chain Resilience Initiative** is a step in this direction which would reduce the dependence on imports from a handful of countries.
- The comparative advantage that South Asia and **India have in tech services** and niche tourism will likely be in higher demand as the global economy becomes more digital.
- **Other Related News:**
 - India's **eight core industrial sectors contracted by 8.5%** in August 2020 compared to **August 2019**, marking the sixth month in a row of shrinking output.
 - According to the recent **National Statistical Office (NSO)** data, India's **GDP growth contracted by 23.9%** in the first (April-June) quarter of 2020 compared to the same period (April-June) in 2019.

Measures to Boost Consumption Demand and Capex

Why in News

Recently, the government has announced a **twin set of measures to boost consumption demand and capital expenditure** (Capex), which are estimated to result in quick spending of more than Rs. 1 lakh crore by March 2021.

- These measures are the **Leave Travel Concession (LTC) voucher scheme** and a **festival advance scheme**. Also, **measures have been announced to step up Capex by the Centre and the states**.

Note:



Key Points

➤ Aim:

- Supply constraints in the economy have eased over recent months, but consumer demand remained affected and these measures aim at advancing consumer spending and Capex.

- Capex steps are “directly linked to an increase in economic output given their high multiplier effect”.

- The earlier announced **Atmanirbhar Bharat** package addressed the requirement of essential goods for needy sections of the society and now these measures aim at promoting consumption of high-value items by those employees whose salaries and jobs have not been affected by **Covid-19 pandemic**.

- With the participation of the private sector, these will stimulate growth in the economy by advancing the consumption of non-essential, relatively high-value goods and services in the economy.

➤ Leave Travel Concession Voucher Scheme:

○ Leave Travel Concession:

- Central government employees get LTC in a block of four years, one each to a destination of choice and home town or two for home town.
- Under this, the air or rail fare is reimbursed as per pay scale/entitlement. Also, a leave encashment of ten days (pay+dearness allowance) is paid.
- However, employees will not be able to avail the LTC in the 2018-21 year block due to the ongoing pandemic and this is where the LTC will benefit government employees.

- In lieu of one LTC during 2018-21, employees will receive cash payment. There will be full payment on leave encashment and fare will be paid as per three slabs depending upon the class of entitlement. Further, there will be no tax on fare payment.

- An employee opting for this scheme will have to buy goods and services worth three times the fare and one time leave encashment, and do so before 31st March 2021.

- The money is to be spent on goods attracting Goods and Services Tax (GST) of 12% or more and only digital payments will be allowed. Also, employees will have to provide the GST invoice.

- If the amount is not spent then the employee will have to pay tax as per the marginal tax rate on the LTC component.

- The same benefits will be available to private-sector employees if the employers decide to offer the scheme to their employees and they decide to avail it.

○ Benefits to Economy:

- The government expects a demand generation of Rs. 28,000 crore (Rs. 19,000 crore from central government employees and the rest from states) in the economy.

- While GST collections have been severely impacted in the first half of the fiscal due to Covid-19 pandemic, a consumption boost will lift GST collections in the second half of the year as the scheme calls for expenditure to be done till 31st March 2021.

- If private-sector employees also participate, it may lead to a significant jump in overall consumption and rise in GST collections.

- Since most employees have not been able to travel after the pandemic, the shifting of the LTC benefit is expected to generate demand elsewhere.

➤ Festival Advance:

- Festival advance, which was abolished in line with recommendations of the 7th Pay Commission, has been restored for one time till 31st March 2021.

- All central government employees will get an interest-free advance of Rs. 10,000 that will be recovered in 10 instalments. It will be given in the form of a pre-loaded RuPay card of the advance value.

- The government expects to disburse Rs. 4,000 crore under the scheme by 31st March 2021 and if all states provide similar advances, another Rs. 8,000 crore is likely to be disbursed.

- This is expected to generate consumer demand ahead of festivals like Diwali.

➤ Other Measures to Boost Capital Expenditure:

- An additional budget of Rs 25,000 crore for Capex on roads, defence infrastructure, water supply, urban development, and domestically produced capital equipment. This is expected to come through re-allocation of resources.

- Special assistance will be provided to states in the form of interest-free 50-year loans of Rs. 12,000 crore, which can be used only for Capex purposes, with certain conditions.

Note:



A look at the measures

TO LIFT CONSUMER DEMAND

LTC CASH VOUCHER SCHEME

- Cash equivalent to leave encashment plus three times the ticket fare, for which three slabs will be offered
- Money to be spent on items with GST levy of 12% or more

ESTIMATED DEMAND GAIN: ₹19,000 cr
if only central/central PSE staff get it, ₹9,000 cr if states offer scheme too

Who benefits: Central government employees. State governments and private companies can match these moves but are not under obligation to do so

SPECIAL FESTIVAL SALARY ADVANCE

- ₹10,000 to be offered as salary advance, to be deducted in 10 installments without interest
- Advance available till March 31 in Rupay cards, cannot be withdrawn as cash

ESTIMATED DEMAND GAIN: ₹4,000 crore; ₹8,000 cr
if state governments offer it too

TO SPUR CAPITAL EXPENDITURE

₹12,000
crore in special interest-free 50-year loans to states to help Capex spending

₹25,000
crore in addition to Budget outlay to be made available for infra projects

Concerns:

- **Too Many Restrictions:** Provisions like buying goods and services worth three times the fare, only in goods attracting GST of 12% or more through digital mode before 31st March etc. **end the freedom of the consumer** in decision making.
- **Smaller Size:** Capex amounts are **too small to have any meaningful impact** on economic growth.
 - With the previous rounds of budgetary fiscal support of around 1% of GDP, current measures take total fiscal support to **about 1.2% of GDP**, which is **small compared with the size of the growth hit** and reflects India's weak fiscal starting position.
- **Limited Impact:** As the measures are aimed at encouraging spending for government employees **rather than private/vulnerable sections** (where **job losses/income losses have been significant**), the **overall impact will be limited**.
- **On Tourism:** LTC Voucher Scheme may impact the travel and tourism industry negatively if consumers choose to spend through the scheme. **Demand in travel and tourism has already fallen significantly** after the Covid-19 induced **lockdowns** and closed borders.

India's Public Debt Ratio

Why in News

As per the **International Monetary Fund** (IMF), India's public debt ratio is **projected to jump by 17 percentage points to almost 90%** because of an **increase in public spending due to Covid-19**.

- India's public debt ratio has **remained stable at about 70% of the Gross Domestic Product (GDP)** since **1991**.

Key Points

➤ Increase in Public Debt Ratio:

- The increase in **public spending**, in response to Covid-19, and the **fall in tax revenue and economic activity**, will make the public debt ratio jump by 17 percentage points.
- The ratio is **projected to stabilise in 2021**, before slowly declining up to the end of the projection period, in 2025.

- The **pattern of public debt in India is close to the norm around the world**.

- This **debt-to-GDP ratio** is the metric **comparing a country's public debt to its GDP**. It is often **expressed as a percentage**.
- By comparing what a country owes (debt) with what it produces (GDP), the debt-to-GDP ratio **reliably indicates a particular country's ability to pay back its debts**.
- A **country with a high debt-to-GDP ratio** typically has **trouble paying off public debts**.

➤ Assessment of Fiscal situation (relating to taxation, public spending, or public debt):

- India has been an **important source of growth in the world since the 1991 economic liberalisation reforms**.
- **Real GDP growth** averaged **6.5% between 1991 to 2019**, and **real GDP per capita was multiplied by four** over that period.
 - **Real GDP** is calculated in a way such that the goods and services are evaluated at some constant set of prices.
 - **Nominal GDP**, on the other hand, is simply the value of GDP at the current prevailing prices.
- This impressive growth performance helped **lift millions of people out of extreme poverty**.
 - The extreme poverty rate, **measured as the proportion of people whose income is less than USD 1.90 a day at purchasing power parity** (the international poverty line), fell from 45% in 1993 to 13% by 2015.
 - India **achieved the millennium development goal of halving poverty by 2015** (from its 1990 level).

Note:



- India has made **astonishing progress** in other areas as well:
 - **Education** enrollment is nearly universal for primary school.
 - **Infant mortality rates** have been halved since 2000.
 - **Access to water and sanitation, electricity, and roads** has been greatly improved.

Contraction in August Core Industry Output: IIP

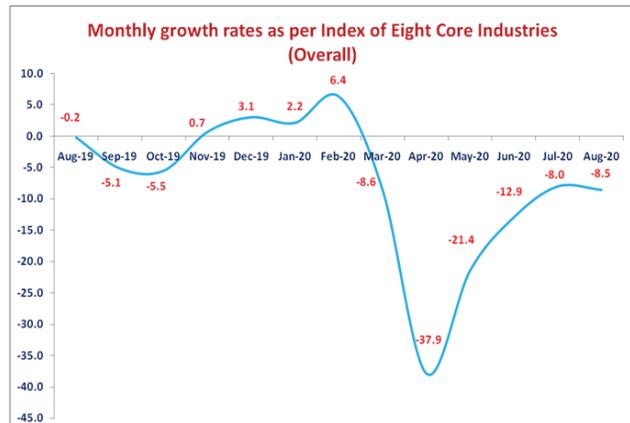
Why in News

India's **eight core industrial sectors contracted by 8.5%** in August 2020 compared to August 2019, marking the sixth month in a row of shrinking output.

- The eight core sector industries are **coal, crude oil, natural gas, refinery products, fertilisers, steel, cement and electricity**.
- These **eight industries account for 40.27%** in the Index of Industrial Production (IIP).

Key Points

- **Contraction:**
 - The cumulative growth of Core Industries during April to August, 2020-21 has been (-) 17.8%.
 - Except for coal and fertilisers, production continued to decline in most core sectors in August.
 - Coal production increased 3.6% on-year in August after four months of contraction, due to improvement in offtake level.
 - An offtake agreement is an arrangement between a producer and a buyer to purchase or sell portions of the producer's upcoming goods.
 - The steepest decline in August was observed in refinery products, which dropped 19.1%. This was followed by cement, and natural gas.
- **Reason:** The drop in August is due to factors like:
 - Low demand in the economy.
 - Unavailability of equipment for setting up newer production platforms.
 - Seasonal and lockdown restrictions.



Index of Industrial Production

- The Index of Industrial Production (IIP) is an index that shows the growth rates in different industry groups of the economy in a fixed period of time.
- It is compiled and published monthly by the **National Statistical Office (NSO)**, Ministry of Statistics and Programme Implementation.
- IIP is a composite indicator that measures the growth rate of industry groups classified under:
 - Broad sectors, namely, Mining, Manufacturing, and Electricity.
 - Use-based sectors, namely Basic Goods, Capital Goods, and Intermediate Goods.
- The **eight core sector industries** represent about 40% of the weight of items that are included in the IIP.
 - The **eight core industries** in decreasing order of their weightage: Refinery Products (28.04 %) > Electricity (19.85 %) > Steel (17.92 %) > Coal (10.33 %) > Crude Oil (8.98 %) > Natural Gas (6.88 %) > Cement (5.37 %) > Fertilizers (2.63 %).
- **Base Year for IIP** calculation is **2011-2012**.
- Significance of IIP:
 - IIP is the measure on the physical volume of production.
 - It is used by government agencies including the Ministry of Finance, the **Reserve Bank of India**, etc, for policy-making purposes.
 - IIP remains extremely relevant for the calculation of the quarterly and advance **Gross Domestic Product (GDP)** estimates.



Note:

International Relations

Highlights

- Referendum in New Caledonia
- India-Myanmar Relationship
- USA Aircraft Refuelling at A&N Islands
- India's Stand on Nuclear Weapons
- India-Japan Foreign Ministers' Strategic Dialogue
- Protests to Coup: Kyrgyzstan
- India in BRICS Ministers' Meeting
- Pakistan Re-elected to the UNHRC
- India-Mexico

Referendum in New Caledonia

Why in News

The French territory of New Caledonia **voted against independence from France** in a referendum held recently.

- The referendum was a part of a decolonisation plan agreed in 1998, known as the **Noumea Accord**.

Key Points

- **About:** New Caledonia is an **archipelago** and special collectivity of France located in the southwest Pacific Ocean.
- **Population:** The **indigenous Kanaks** represent around 39% of the population, while **European settlers** (known as **Caldoches**) make up about 27%.
 - Most of the remainder are from other Pacific islands, which are of mixed heritage, called Caledonians.
- **History:**
 - New Caledonia was **discovered in 1774** by the British navigator **James Cook**.
 - It was **annexed by France in 1853**.
 - In 1946, New Caledonia became an overseas territory.
 - By 1953, French citizenship had been granted to all New Caledonians, regardless of ethnicity.
- **Economy:** Besides having one of the region's highest average incomes per capita, New Caledonia is rich in resources and accounts for around **10% of the world's nickel reserve**.



- **Political Status:** New Caledonia is a **territory sui generis** i.e. territory of its own kind.
 - It is a **French overseas collectivity** i.e. they are first-order administrative divisions of France but have a semi-autonomous status.
 - It is one of the **United Nations 17 Non-Self-Governing territories** - where the process of decolonisation has not been completed.
 - Non-Self-Governing Territories are defined as “territories whose people have not yet attained a full measure of self-government”. It includes the Cayman Islands, British Virgin Islands, Bermuda, Western Sahara, etc.
 - They vote in French elections and have French nationality.
 - New Caledonia has a **power-sharing executive** elected by the territory's Congress, which ensures that all parties on it are represented in proportion to their number of seats in Congress.
 - It depends on France for matters like defence and education.
- **Conflict Over Independence:** The country has had conflicts over the issue of autonomy and independence from France for a long time.
 - New Caledonia has **deep divisions between its indigenous Kanak population and Europeans**, with indigenous Kanaks favouring independence and Europeans being against it.
 - In the 1980s, the country had violent conflicts between the opponents and supporters of independence which culminated into **Matignon Accords** in 1988.

Note:

- The Accords specified a 10-year transitory status, after which a self-determination referendum would be held.
- The **Noumea Accord**, which was concluded in 1998, provided for a practically sovereign status. Under this agreement, New Caledonia is allowed up to **three referendums on independence**, the latest one being the last of them.

➤ Significance:

- At a time where Chinese influence on the island, and in the whole **South Pacific region** is growing, it is very significant for France to be able to retain control over the island.
 - A significant portion of New Caledonia's exports goes to China, much of which is nickel.
- Though India has no official position of the referendum, the results of this referendum are particularly important for India in the double context of growing **India-France relations** and Indo-China conflicts. France is urging Australia and India to form a new "**strategic axis**" in the Indo-Pacific with it and New Caledonia to counter China's rise.

India-Myanmar Relationship

Why in News

A two-day visit by the Foreign Secretary of India and the Army Chief to Myanmar completed with greater engagement between **India and Myanmar**.

Key Points

- **Health and Pandemic:** As a part of India's **Medical or Drug Diplomacy** a package of **3,000 vials** of the **antiviral Remdesivir** given to assist Myanmar in its fight against the pandemic.
 - India has shown willingness to prioritise Myanmar in sharing Covid -19 vaccines, when available.
- **Infrastructure and Connectivity:** Operationalisation of the crucial **Sittwe port** in Myanmar's Rakhine state **by March 2021** is committed.
 - The two sides also discussed progress in the ongoing Indian-assisted infrastructure projects such as the **India-Myanmar-Thailand trilateral highway** and the **Kaladan Multi-Modal Transit Transport Project**. The project will link **Kolkata to Sittwe in Myanmar** and then from **Myanmar's Kaladan river to India's north-east**.



- **Security:** India has been concerned over some militant groups like the United National Liberation Front (UNLF) and National Democratic Front of Bodoland (NDFB) from the North-East region taking shelter in Myanmar.
 - Myanmar handed over 22 cadres of Indian insurgent groups in May 2020.
 - The maintenance of security and stability in their border areas and mutual commitment not to allow their respective territories to be used for activities inimical to each other were re-stressed.
- **Transition to Democracy:** Myanmar successfully conducted the 4th meeting of the **21st Century Panglong Peace Conference in Nay Pyi Taw**.
 - **The Union Peace Conference: 21st Century Panglong** is a continuing peace conference started in **2016**.
 - **Aim:** To have a stable political environment in Myanmar with peaceful transition into democracy.
 - **Outcome of 4th meeting:** The government of Myanmar and ten armed ethnic groups signed a framework agreement for the **National Ceasefire Agreement (NCA)**.
 - **Indian Support:** India assured continued support in sharing experiences in constitutionalism and federalism to assist Myanmar in its **democratic transition**.
- **Rohingya Issues:** India came forward for support for ensuring safe, sustainable and speedy return of **Rohingya refugees** from refugees camps of Bangladesh.
 - Building on the progress made under the **Rakhine State Development Programme (RSDP)**, India proposed to finalise projects under **phase-III** of the programme, including setting up of a **skills training centre** and **upgrading of agricultural mechanisation**.
- **Liaison Office:** With the formal inauguration of liaison office in Nay Pyi Taw, India has taken one more **significant step** towards establishing its **embassy** in Nay Pyi Taw.
 - India has its embassy in **Yangon**, the former capital.

Note:

➤ Other Highlights:

- A **bust of Bal Gangadhar Tilak** in **Mandalay Jail** is a symbolic gesture for a closer relationship and understanding mutual existence.
 - **Mandalay Jail Connection:** Between **1908 and 1914**, he spent 6 years in Mandalay Prison for defending the actions of revolutionaries Khudiram Bose and Prafulla Chaki.
 - **Khudiram Bose and Prafulla Chaki** had tried to assassinate the District Judge, Mr. Kingsford by throwing bombs at the carriage in which he was supposed to travel.
- **Investment:** With investments of over USD 1.2 billion, Myanmar has the highest Indian investment in any country in South Asia.
 - India's development cooperation in Myanmar is estimated at USD 1.4 billion.
- **Energy:** The two countries are also expanding partnership in the area of **energy cooperation**.
 - Recently, India approved an investment of over USD 120 million in the Shwe Oil and Gas project.

India-Myanmar

- **India and Myanmar** have shared cultural roots and historical relations, apart from the strategic, economic, social and political ties.
- Myanmar is a **member of both Association of Southeast Asian Nations (ASEAN)**, which is an organization of East Asian nations as well as **the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** which bridges South and South-East Asia.
- Connectivity projects through Myanmar help India overcome its **Chicken-neck dilemma (Siliguri Corridor)**. Myanmar is also necessary for the **development of North-Eastern India**.
- Myanmar stands at the confluence of India's **Neighbourhood First** and **Act East Policy** and **India-Myanmar partnership** is at the heart of India's vision to create a connected and cooperative neighbourhood.
- Recently, **India and Myanmar** had signed **10 agreements with a focus on socio-economic development of Myanmar**, during Myanmar President U Win Myint's visit to India.
- Myanmar's growing closeness with China and the recent proposal of **China Myanmar Economic Corridor** is a cause of concern for India amidst growing **India-China tension**.

USA Aircraft Refuelling at A&N Islands

Why in News

Recently, a **USA Navy P-8A long range Maritime Patrol Aircraft (MPA)** landed at **Port Blair** in the Andaman and Nicobar (A&N) Islands for refuelling **under the bilateral logistics support agreement**.

- This is the first time the USA got access to A&N under the **Logistics Exchange Memorandum of Agreement (LEMOA)**.

Key Points

- **LEMOA:**
 - It allows both countries to **have access to each other's designated military facilities** for refueling and replenishment.
 - Signed by India in **2016**.
- **Other foundational military communication agreements with the USA:**
 - **General Security of Military Information Agreement:**
 - GSOMIA allows **militaries to share the intelligence** gathered by them.
 - Signed by India in **2002**.
 - An extension to the GSOMIA, the **Industrial Security Annex (ISA)**, was signed at the 2+2 dialogue in **2019**.
 - ISA provides a framework for exchange and protection of classified military information **between the USA and Indian defence industries**.
 - **Communications and Information Security Memorandum of Agreement:**
 - Valid for 10 years, COMCASA aims to provide a legal framework for the **transfer of highly sensitive communication security equipment from the USA to India** that will streamline and facilitate interoperability between their armed forces.
 - Signed by India in **2018**.
- **BECA:** The USA is looking forward to India signing the **Basic Exchange and Cooperation Agreement for Geo-Spatial cooperation (BECA)**, at the next India-USA 2+2 ministerial dialogue likely to be held in October, 2020.

Note:

- BECA will **allow India to use the geospatial maps of the USA** to get pinpoint military accuracy of automated hardware systems and weapons such as cruise and ballistic missiles.
- **Strategic Significance of A&N Islands:**
 - It is **close to the Strait of Malacca** and global sea lanes of communication.
 - A&NI has become an important element of India's **"Act East Policy"** of engaging with countries in the region east of India.
 - The Andaman and Nicobar chain of islands could be used as a **basis for Indian maritime power projection into the Indo-Pacific** and even beyond into the south-west Pacific.
 - The A&NI could be used for India's **Third Fleet** (other two are the Western and Eastern Fleets) **and the trans-shipment hub** at Car Nicobar, could potentially be a strategic game-changer, rivalling the ports of Singapore or Colombo.
 - Changing nature of warfare has led to the expansion of scope of a **Tri-Command Service**.
 - As Andaman and Nicobar is the first Tri-Command structure in India, development of military infrastructure at A&NI is a key requirement in India's security strategy.
- **Increased Maritime Interactions with Quad Countries:**
 - **Quadrilateral Security Dialogue (Quad)** is the **informal strategic** dialogue between **India, USA, Japan and Australia** with a shared objective to ensure and support a **"free, open and prosperous" Indo-Pacific region**.
 - There has been a sharp increase in India's **maritime interactions with the Quad countries** on a bilateral basis centred around information sharing for improved **Maritime Domain Awareness (MDA)** in the **Indian Ocean Region** and **Indo-Pacific**.
 - **MDA** is defined by the **International Maritime Organization** as the effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment of a country.
 - India has **logistics agreements** with all three Quad countries — **Australia, Japan and the USA**. India has also signed **maritime information sharing agreements** with Australia and Japan and a similar agreement is in the works with the USA.

India's Stand on Nuclear Weapons

Why in News

In the recent **High-level Meeting to Commemorate and Promote the International Day for the Total Elimination of Nuclear Weapons** (26th September 2020), India reiterated that nuclear weapons should be abolished in a step-by-step non-discriminatory process.

Key Points

- India remains committed to the **policy of No First Use (NFU) against nuclear weapon states and non-use against non-nuclear-weapon states**.
- The recent stand indicates that India has **not revised its key principles regarding the NFU principle**.
 - In 2019, the Defence Minister hinted at a possibility of changing the principle by declaring that **'circumstances' will determine the "No First Use" stance**.
- India is a key partner in **global efforts towards disarmament and strengthening the non-proliferation order**.
- India believes that nuclear disarmament can be **achieved through a step-by-step process** underwritten by a **universal commitment** and an **agreed multilateral framework** after meaningful dialogues among all States possessing nuclear weapons, for building trust and confidence.
- The **Conference on Disarmament (CD)** remains the **"world's single multilateral disarmament negotiating forum"** and India supports holding of negotiations on a **Comprehensive Nuclear Weapons Convention** at the CD.
- India also remains committed to negotiations regarding a **Fissile Material Cut-off Treaty (FMCT)** in the CD.
 - FMCT is a **proposed international agreement that prohibits the production of two main components of nuclear weapons: highly-enriched Uranium and Plutonium**.
 - The consultations under the treaty laid down the most appropriate arrangement to negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.

Note:



2020 ESTIMATED GLOBAL NUCLEAR WARHEAD INVENTORIES

The world's nuclear-armed states possess a combined total of nearly 13,500 nuclear warheads; more than 90% belong to Russia and the United States. Approximately 9,500 warheads are in military service, with the rest awaiting dismantlement.



➤ Global Efforts:

- The **Treaty on the Non-Proliferation of Nuclear Weapons (NPT)**, the **Comprehensive Nuclear-Test-Ban Treaty (CTBT)** and the **New START Treaty** (between the USA and the Russian Federation) are few of the most important global efforts towards nuclear disarmament.
 - **India has not signed NPT and CTBT.**

International Day for the Total Elimination of Nuclear Weapons

- In **2013**, the **UN General Assembly (UNGA)** declared **26th September** to be the International Day for the Total Elimination of Nuclear Weapons (**Nuclear Abolition Day**).
- **Objective:** Total elimination of nuclear weapons through enhancing public awareness and education about the threat posed to humanity by nuclear weapons and the necessity for their total elimination.
- Achieving **global nuclear disarmament is one of the oldest goals** of the United Nations.
- The UNGA resolution establishing the day, also **calls for progress on a nuclear weapons convention**, a global treaty involving the nuclear-armed states in the prohibition and elimination of nuclear weapons under strict and effective international control.

India-Japan Foreign Ministers' Strategic Dialogue

Why in News

India and Japan recently held **13th India-Japan Foreign Ministers' Strategic Dialogue** in which inter-alia both

countries agreed to sign a **Memorandum of Cooperation (MoC)** in the field of **cybersecurity** that will promote cooperation in key areas such as **5G network**, Critical Information Infrastructure, **Internet of Things (IoT)** and **Artificial Intelligence**.

Key Points

➤ Cyber Security MoC

- It will enhance **cooperation in areas of mutual interest**, which include **capacity building** in the area of cyberspace, protection of **critical infrastructure**, sharing information on cybersecurity, developing joint mechanisms for practical cooperation to **mitigate cyber threats** etc.
- **Significance:** It will attract stakeholders in the Indian 5G sector as it gets ready to open up for international operators.
 - This becomes even more important since it is possible that the **Chinese companies are not allowed to participate in the 5G** arena in India due to recent **Indo-China tensions**, increasing **cybersecurity threat due to Chinese cyber-attacks** and **hybrid data warfare** by China.
 - Japan is upgrading its cybersecurity as it has been repeatedly hit by **cyberattacks** this year.
 - Also, **Covid-19 pandemic** has made countries, companies and institutions dependent on digital technology more than ever before.

➤ The dialogue emphasized a strong partnership between the two countries in overcoming **challenges posed by the Covid-19 pandemic**.

- With Covid-19 and **trade tensions between China and the United States** are threatening supply chains, Japan has mooted the **Supply Chain Resilience Initiative (SCRI)** as a **trilateral approach** to trade, with India and Australia as the key-partners.

➤ The **importance of the Indo-pacific region** was discussed.

- Japan and India both have similarities in their respective Indo-Pacific visions, that are based on rule of law and respect for sovereignty and territorial integrity.
- Both Japan and India need to counter the increasing Chinese aggression in the region.
- India launched the **Indo-Pacific Oceans Initiative (IPOI)** at the **East Asia Summit** in November 2019.

Note:



- It focuses on seven central pillars conceived around Maritime Security, Maritime Ecology, Maritime Resources, Capacity Building and Resource Sharing, Disaster Risk Reduction and Management, Science, Technology and Academic Cooperation, and Trade Connectivity and Maritime Transport.
- The issue of **abduction of Japanese nationals by North Korea** was also raised on which India promised to extend support for closure.
- Abductions of Japanese citizens from Japan by agents of the North Korean government took place from **1977 to 1983**. Although only 17 Japanese are officially recognized by the Japanese government as having been abducted, there may have been hundreds of victims.
- **Other Recent Developments Between India and Japan**
 - Recently, India and Japan signed a **logistics agreement** that will allow armed forces of both sides to coordinate closely in services and supplies. The agreement is known as **the Acquisition and Cross-Servicing Agreement (ACSA)**.
 - In 2019, India and Japan held the first-ever ministerial-level **2+2 dialogue**. This dialogue involves the Defence and Foreign Ministers on both sides and is seen as an endorsement of the special strategic partnership between **India and Japan**.
 - Both countries are also part of the **Quadrilateral Security Dialogue (QUAD)**. Recently, it has been reported that the second Ministerial meeting of Quad countries will be held in Japan.
 - An **“India-Japan Digital Partnership” (I-JDP)** was launched during the visit of the Prime Minister of India to Japan in October 2018, furthering existing areas of cooperation as well as new initiatives within the scope of cooperation in S&T/ICT, focusing more on **“Digital ICT Technologies”**.
 - In **2014**, India and Japan upgraded their relationship to **‘Special Strategic and Global Partnership’**.
 - The **India-Japan Comprehensive Economic Partnership Agreement (CEPA)** that came into force in August 2011 covers trade in goods, services, movement of natural persons, investments, Intellectual Property Rights, custom procedures and other trade-related issues.
 - India and Japan defence forces organize a series of **bilateral exercises namely, JIMEX, SHINYUU Maitri, and Dharma Guardian**. Both countries also participate in the **Malabar exercise with the USA**.

Protests to Coup: Kyrgyzstan

Why in News

Protesters in Kyrgyzstan have **captured key government buildings**, including the **Parliament** house and the **presidential office** and the situation is like a coup.

Key Points

- **Background:** Kyrgyzstan, often referred to as Central Asia’s **only democracy**, had seen violent anti-government protests in the past.
 - In 2005 and 2010, sitting presidents were forced out of office in popular protests- **‘Tulip’** and **‘Melon’** revolutions.
 - The **current protests** began after **early results of the parliamentary election** were announced.
 - Political parties in Kyrgyzstan should win at least 7% of the popular vote to enter Parliament.
 - The results showed that **only four parties managed to cross the threshold** and of which, **three were pro-government parties**.
 - The only **one opposition party** could cross the threshold.
- **Reason for the Protest:**
 - Even before the election, political fault lines were sharpening in Kyrgyzstan.
 - The country’s main political party, the Social Democratic Party of Kyrgyzstan (SDPK), stayed out of the election due to intra-party rift and split.
 - Several political leaders were detained and **elections were perceived as rigged**.



Note:

- Consequently, after elections, protestors formed a **Coordination Council** to lead the “revolution”. The country’s Election Commission annulled the results, but the protesters continued.
- **Official View:** Opposition’s intention is to instigate a political coup.
- **The Opposition’s View:** The elections were rigged which made people protest against the establishment.
- **Kyrgyzstan’s Importance:**
 - It has been key to the strategic plans of both Russia and China.
 - **Russia** considers the region as its backyard and plays hard politics to retain its influence.
 - Kyrgyzstan is a member of the **Russia-led Collective Security Treaty Organisation (CSTO)**.
 - **CSTO** is a Russia-led military alliance of six former Soviet states that was created in 2002.
 - Its aim is to ensure the collective defence of any member that faces external aggression.
 - **Members of CSTO:** Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russian Federation and Tajikistan
 - While Russia has cultivated strong ties with all political factions in Kyrgyzstan, radical political changes could throw up opportunities for its rivals.
 - **Belarus**, another country in Russia’s backyard with a pro-Russia President, is already witnessing political turmoil after August’s Presidential election.
 - In the South Caucasus, the **conflict between Armenia and Azerbaijan**, both former Soviet Republics, over Nagorno-Karabakh, risks dragging Russia into a conflict that Russia doesn’t want.
 - All three combined, Russia’s attempts to build stronger political and economic integration with the former Soviet region are suddenly facing critical challenges.
 - **China** - This landlocked Central Asian country that **shares a long border with China**.
 - It is located at the centre of Eurasia, and is a vital link in its **Belt and Road Initiative**.
 - In 2019, Chinese President visited Bishkek (capital)- shows close link with the current establishment.

- China has built road and rail networks with Kyrgyzstan and Uzbekistan.
- **USA:** During the early stages of the **Afghan war**, the USA had used Kyrgyzstan for refuelling and other logistical purposes.
 - The USA base was shut down in 2014 by Parliament.
 - A regime change can be favourable for the USA.

India-Kyrgyzstan

- India has enjoyed strong bilateral ties with Kyrgyzstan **since 1991**.
- India was one of the first countries to establish diplomatic ties with Kyrgyzstan in 1992.
- Since 1992, the two countries have **many agreements**, including on Culture, Trade and Economic Cooperation, Civil Aviation, Investment Promotion and Protection, Avoidance of Double Taxation, Consular Convention etc.
- In 2011, the joint **‘Khanjar’** series of exercises was started.
- **Indian diaspora in Kyrgyzstan**- about 9,000 Indian students are studying medicine in various medical institutions in the country. Also, there are many businessmen living in Kyrgyzstan who are involved in trade and several other services there.
- **Strategic:** The Kyrgyz leaderships have been largely **supportive of India’s stand on Kashmir**.
 - They also **support India’s bid for a permanent seat at the UNSC**.
- Departure from a Democratic Regime may bring uncertainty for India’s interests.

India in BRICS Ministers’ Meeting

Why in News

Recently, the **BRICS Labour and Employment Ministers’ Virtual Meeting** was held under the **Russian Presidency**.

- It aimed to discuss various **issues including approaches to creating a safe work culture in BRICS countries**.

Key Points

- **Emphasis on Health of Workers:**

Note:



- It was highlighted that **health, welfare and improved working conditions** are essential for the well-being of the workers. A healthy workforce in the country would be more productive and contribute to economic growth.
- The **aspects of occupational safety and health measures** to mitigate the impact of **Covid-19** have also acquired significance.
- **India's Stand:**
 - India **called for suitable global action** especially by BRICS towards effecting a **balance between labour and employer** which will generate growth and create more jobs and greater labour welfare.
 - India also **highlighted the importance of digitisation and technological advancements** like **artificial intelligence** (AI) and **robotics** in reshaping lives and work, with a direct or indirect effect on the labour market.
 - Digitisation also **offers the opportunity** for governments, individuals and businesses to **cope with the changing scenarios after the pandemic**.
 - India underscored that the **digital economy** is changing the world of work, hence **regular studies by the BRICS Network Research Institutes** will facilitate a **better understanding** of the aspects of future of work and supplement policymaking.
 - India is committed to **eradicate poverty** and **promote prosperity** in a changing world and hence adopted a multi-dimensional strategy to eliminate poverty by covering most of the basic services and fulfil the **Sustainable Development Goals of No Poverty** (SDG-1).

Initiatives Highlighted by India

- **Occupational Safety, Health and Working Conditions Code Bill, 2020:**
 - Provides a dynamic and effective framework of occupational safety and health at the workplace and covers legal provisions of all sectors.
 - Envisages safety standards for different sectors, focusing on the health and working condition of workers, hours of work, leaves, etc.
- **Social Security Code Bill, 2020:**
 - **Universalises social security coverage** to those working in the unorganised sector, such as migrant workers, gig workers and platform workers.

- **Recognises emerging forms of work** by defining terms like an aggregator, gig worker and platform worker, and extends social protection to such workers through a **separate Social Security Fund** wherein the contribution from aggregators would be deposited.
- Provisions of social security will also be **extended to agricultural workers**.
- **Industrial Relations Code Bill, 2020:**
 - Sets up **Grievance Redressal Committees** for resolution of disputes arising out of employees' grievances.
 - Also sets up a reskilling fund to help skill retrenched workers.
- **Pradhan Mantri Kisan Samman Nidhi:**
 - Provides direct income support to farmers for easing their liquidity needs to facilitate timely access to inputs.
 - Aiding modernisation and makes farmers competitive.
- **Atmanirbhar Bharat Abhiyaan:**
 - Protects the economy from the **adverse impact of the Covid-19 crisis**.
 - Measures include opening a credit line for micro, small and medium enterprises to meet their operational expenses, subsidising the social security contributions of workers, extending unemployment benefit to workers, financial assistance to construction workers, collateral-free working capital loan to approximately 5 million street vendors, etc.
- **Other Related Schemes:**
 - **National Rural Employment Guarantee Scheme.**
 - **National Livelihood Mission.**

Pakistan Re-elected to the UNHRC

Why in News

Pakistan is currently serving on the **United Nations Human Rights Council (UNHRC)** since 1st January, 2018. With its re-election, Pakistan will continue as a member for another **three-year term commencing on 1st January, 2021**.

Note:



- A total of **Fifteen countries were elected to the 47-nation council**. Russia and Cuba were elected unopposed. Pakistan, Uzbekistan, Nepal and China were elected from the Asia-Pacific region.

Key Points

- Pakistan has been re-elected despite **opposition from activist groups** over its abysmal human rights records. This is the **fifth time** that Pakistan has been elected to the UNHRC.
 - According to the British Government's **Foreign and Commonwealth Office Report** titled '**Human Rights and Democracy**', there were serious human rights concerns and violations in Pakistan in 2019, including restrictions on civic space and freedom of expression, intolerance and direct and open discrimination towards minorities.
- **Concerns:**
 - **Countries with Dubious Record:** With a number of countries with questionable rights records being elected, the current system of entry to **UNHRC is in serious need of reform**.
 - The election of states such as **China and Russia** "damages the reputation of the HRC, its standing within the international human rights committee and beyond".
 - **Non-competitive Elections:** Problem of election without opposition.
 - For example, the Eastern European group had two available seats but only two countries were nominated to fill those positions, meaning there was no competition for the spots.
 - Except for the Asia-Pacific contest, the election of 15 members to the 47-member Human Rights Council was decided in advance because all the other regional groups had **unopposed states**.
- **The Other View:** Electing nations with dubious human rights records has some **positives**.
 - There is a silver lining to repressive countries being elected to the council – their position as the supposed guardian of human rights makes it far **more difficult for them to hide their own human rights abuses**.

United Nations Human Rights Council

- It was established in **2006**.
- **Headquarter:** Geneva, Switzerland

- **Aim:** Promoting and protecting human rights around the globe, as well as investigating alleged human rights violations.
- **Features:** The UNHRC has **47 members** elected for staggered three-year terms on a regional group basis from 5 groups.
 - **Membership:** To become a member, a country must receive the votes of at least 96 of the 191 states of the UN General Assembly (an absolute majority).
 - According to **Resolution 60/251**, which created the council, members are elected directly by secret ballot by the majority of the UN General Assembly. Membership has to be **equally distributed geographically**.
 - **Five regional groups for membership:** Africa, Asia-Pacific, Latin America and the Caribbean, Western Europe and Eastern Europe.
 - The members are elected for a period of **three years**, with a **maximum of two consecutive terms**.
 - **Sessions:** The UNHRC holds **regular sessions** three times a year, in March, June, and September.
 - The council also carries out the **Universal Periodic Review** of all UN member states, which allows civil society groups to bring accusations of human rights violations in member states to the attention of the UN.

India-Mexico

Why in News

- Recently, the **5th meeting of the India-Mexico Bilateral High-Level Group (BHLG) on Trade, Investment and Cooperation** has been held through video conference.
- The **4th meeting** of BHLG on Trade, Investment and Cooperation at the level of Commerce Secretary was held **in Mexico City in July 2016**.
 - On **1st August 2020**, India and Mexico celebrated the **70th anniversary of the establishment of diplomatic relations** between them.

Key Points

- Both sides discussed a number of bilateral ongoing and outstanding issues, ranging from **Audio-visual Co-production, Bilateral Investment Treaty, market access**

Note:



for agricultural products, a cooperation framework on Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) measures, cooperation in the Intellectual Property Rights (IPR), and exploring ways to promote tourism and people-to-people contact.

- They also agreed to expand and diversify the bilateral trade relationship through enhanced cooperation in pharmaceuticals, medical equipment, healthcare, agro-products, fisheries, food processing and aerospace industry, etc.
- **Two Memorandum of Understandings (MoUs)** have been signed, to foster the cooperation in the domains of:
 - Electronics, Computer Software and Telecommunications and Information Technologies.
 - Foreign Trade, Investment and Technology.

India-Mexico Relations

➤ Historical Ties:

- Being colonies in the past, India and Mexico have European connections of the colonial era.
- Mexico was the first Latin American country to recognise India after Independence and establish diplomatic relations with India in 1950.
- Mexican wheat varieties used in Indo-Mexican hybrids were the backbone of India's Green Revolution in the 1960s.
- In the Cold War years, Mexico and India had worked together closely as members of the United Nations (UN), both actively championing the interests of developing countries such as in the Uruguay Round of Trade Negotiations (under the World Trade Organisation).
 - Both countries are the members of G-20.



➤ Political and Bilateral Cooperation:

- Both countries established a 'Privileged Partnership' in 2007.
- In 2015, both countries agreed to work for achieving a 'Strategic Partnership'.
- The two countries have several bilateral agreements and MoUs, including for Investment Promotion and Protection, Extradition, Administrative Assistance in Customs Matters, Space Cooperation, etc.

- India gives 20 scholarships to Mexico under the Indian Technical and Economic Cooperation (ITEC) programme and Mexican diplomats are also given training at Forest Survey of India (FSI).

➤ Economic and Commercial Relations:

- Mexico is currently India's largest trading partner in Latin America.
 - In 2018-19, it accounted for almost a quarter of India's trade with the region. India is currently Mexico's ninth-most important global trading partner.
- The last decade has seen a spurt in trade between the two countries, which has grown from around USD 5 billion in 2015-16 to USD 9.4 billion in 2018-19.
- India's Exports: Vehicles and auto parts, organic chemicals, electrical machinery and electronic equipment, aluminium products, readymade garments, iron and steel products and gems and jewellery.
- India's Imports: Crude oil, electrical goods and machinery, organic chemicals, vehicles and auto parts and iron and steel.

➤ Security:

- Both countries share a common concern over growing traditional and non-traditional security challenges, particularly the rise of global terrorism.

➤ Cultural Ties:

- The Gurudev Tagore Indian Cultural Centre has been functioning in Mexico since October 2010, teaching Yoga, classical dances, music, etc.
- An agreement on cultural cooperation has been in existence since 1975 and cooperation activities are carried out through four-yearly 'Programmes of Cultural Cooperation'.

➤ Indian Community:

- The Indian community in Mexico is estimated to be more than 7,000, comprising mostly software engineers of Indian IT companies, academics/professors, and private businessmen.
- Tourism between the two countries is steadily increasing and Mexicans have been extended the online e-Tourist Visa facility.
- Indian nationals holding ordinary passports but having a valid visa for the USA, the UK, Canada, Schengen area or Japan, and holders of permanent residence in the same countries or Member States of Pacific Alliance viz. Colombia, Chile and Peru

Note:



do not need a visa for short tourism or business visits to Mexico.

➤ **Differences:**

- Mexico and India have had **different viewpoints on the issue of nuclear non-proliferation**. However, during Indian Prime Minister's 2016 visit, Mexico pledged support for India's bid to be part of the **Nuclear Suppliers Group (NSG)**.

- Both countries have differences on the issue of **United Nations Security Council (UNSC) reforms**.
 - Mexico has been a member of the **United for Consensus (UfC) group/Coffee Club** that, unlike India and the other **Group of Four (G-4)** members (Japan, Germany and Brazil), opposes the expansion of permanent membership in the UNSC.



Note:

Science and Technology

Highlights

- Narco and Polygraph Tests
- Xoo Infection: Rice
- Anti Radiation Missile: Rudram
- 17th Science and Technology in Society (STS) Forum
- Fluoride & Iron Removal technology of CMERI
- Factor D Protein: Covid-19
- IIT Delhi's Study on Ultrafine Particles
- C-DAC's MoUs on Supercomputing
- Mars Opposition
- Holographic Imaging Based Method
- Aquaponics Facility

Narco and Polygraph Tests

Why in News

Recently, the Uttar Pradesh government has decided to conduct **polygraph and narcoanalysis tests** of the accused and all involved police personnel as part of the investigation into the alleged gangrape and murder of a 19-year old in Hathras last month.

Key Points

➤ Polygraph or Lie Detector Test:

- It is a procedure that **measures and records several physiological indicators** such as blood pressure, pulse, respiration, and skin conductivity while a person is asked and answers a series of questions.
- This test is **based on the assumption** that physiological responses that are triggered when a person is lying are different from what they would be otherwise.
- A **numerical value is assigned** to each response to conclude whether the person is telling the truth, is deceiving, or is uncertain.
- A test similar to Polygraph was first done in the 19th century by the **Italian criminologist Cesare Lombroso**, who used a machine to measure changes in the blood pressure of criminal suspects during interrogation.

➤ Narcoanalysis Test:

- It involves the **injection of a drug, sodium pentothal**, which induces a **hypnotic or sedated state** in which

the subject's imagination is neutralised, and they are expected to divulge information that is true.

- The drug, **also referred to as truth serum**, was used in larger doses as anaesthesia during surgery, and is said to have been used during **World War II** for intelligence operations.
- Recently, investigating agencies have sought to employ these tests in the investigation, and are sometimes seen as **being a softer alternative to torture or "third degree"** to extract the truth from suspects.

➤ Brain Mapping Test or P-300 Test:

- In this test, the activity of the brain of a suspect is measured during interrogation to find out whether he is concealing any information.

➤ Limitations:

- None of these methods **has been scientifically proven to have a 100% success rate** and remains contentious in the medical field as well.
- The **consequences of such tests on individuals from weaker sections of society** who are unaware of their fundamental rights and unable to afford legal advice can be adverse.
- It may involve **future abuse, harassment, and surveillance**, even leakage of the video material to the press for media-trials.

➤ Legal and Constitutional Aspects:

- In the ***Selvi vs State of Karnataka & Anr case (2010)***, the **Supreme Court (SC)** ruled that **no lie detector tests should be administered without the consent of the accused**.

Note:



- Also, those who volunteer must have access to a lawyer and have the physical, emotional, and legal implications of the test explained to them by police and the lawyer.
- The results of the tests **cannot be considered to be “confessions”**, but any information or material **subsequently discovered** with the help of such a voluntarily-taken test can be admitted as evidence.
- The SC cited **Article 20 (3) or Right Against Self-incrimination** which states that no accused can be compelled to be a witness against himself.
- In the **D.K. Basu vs State of West Bengal case (1997)**, the SC ruled that involuntary administration of the polygraph and narco test will amount to cruel, inhuman, and degrading treatment in the context of **Article 21 or the Right to Life and Liberty**.
 - It may also be violative of the **Right to Privacy** which is a part of the **Right to Life**.
- The **Indian Evidence Act, 1871** does not admit the results of these tests as evidence.
- The **National Human Rights Commission (NHRC)** in 1999 adopted a set of **guidelines** relating to the administration of the Polygraph Test which included consent, recording of the test, etc.

Xoo Infection: Rice

Why in News

Recently, scientists from the **Centre for Plant Molecular Biology (CPMB)** have uncovered the mechanism by which a **bacterium called Xoo interacts with rice plants** and causes disease.

- The infection **causes huge yield losses** to rice cultivation throughout the world.
- CPMB is **one of the 7 Centers of Excellence** created in the country with initial financial assistance from the **Department of Biotechnology**, Government of India.
- Currently, it is one of the leading centres of **Plant Molecular Biology** (the study of the molecular basis of plant life).

Key Points

- **About:**
 - **Xanthomonas oryzae pv. oryzae** (Xoo) causes a

serious bacterial leaf blight disease in rice. It is also known as **Bacterial blight**.

- Xoo is a **gram-negative bacteria**.

➤ Transmission:

- It initiates from the leaf sheath and eventually spreads to mature leaves **through the water flow** under optimum temperature and high humidity conditions (**Vascular disease**).



- Since **rice paddies are flooded** throughout most

of the growing season, Xoo may easily spread among crops by the bacteria travelling through the water from infected plants to the roots and leaves of neighbouring rice plants.

- **Wind** may also help spread the Xoo bacteria to other crops and rice paddies.

➤ Impact on Other Crops:

- In addition to rice, Xoo **may infect other plants**, such as rice cut-grass (*Leersia oryzoides*), Chinese sprangletop (*Leptochloa Chinensis*), and common grasses and weeds.

➤ Prevention:

- The **most common method** of defending against rice bacterial blight is the **cultivation of rice varieties with genes that confer resistance to Xoo infection**.

- Over 30 resistance genes, termed **Xa1 to Xa33**, have been identified in rice plants, and some, such as **Xa21**, have been integrated into the genomes of commercial rice strains.

- However, this method **involves breeding or gene manipulation techniques** that are laborious and time-consuming.

- Also, the introduced resistance genes **provide only race-specific resistance** that will prevent infections by only specific strains of Xoo.

➤ New Approach:

- Scientists from the **Centre for Plant Molecular Biology (CPMB)**, Osmania University, **Hyderabad** are working to identify and develop few molecules which are derived either from the Xoo bacterium or from the infected rice cell walls.

- Treatment of rice with **cellulase, a cell wall degrading enzyme secreted by Xoo** induces rice immune responses and protects rice from subsequent infections by Xoo.

Note:



- The cellulase protein has the **features of a typical vaccine** as it is a potent elicitor of rice immune responses.

Rice

- It is a **Kharif crop**.
- **Temperature:** Between 22-32°C with high humidity.
- **Rainfall:** Around 150-300 cm.
- **Soil Type:** Deep clayey and loamy soil.
- **Top Rice Producing States:** West Bengal > Punjab > Uttar Pradesh > Andhra Pradesh > Bihar.
 - Development of a dense network of **canal irrigation and tube-wells** have made it possible to grow rice in areas of less rainfall such as **Punjab, Haryana** and **western Uttar Pradesh** and parts of **Rajasthan**.
- In states like Assam, West Bengal and Odisha, **three crops of paddy** are grown in a year. These are **Aus, Aman** and **Boro**.
- **National Food Security Mission, Hybrid Rice Seed Production** and **Rashtriya Krishi Vikas Yojana** are few government initiatives to support rice cultivation.
- **Major Diseases:** Mainly caused by **bacteria, viruses, or fungi**. These are:
 - **Sheath blight:** Caused by fungus **Rhizoctonia solani**.
 - **Brown Spot:** One of the most common and most damaging **fungal diseases**.
 - **Tungro:** Caused by the combination of **two viruses**, which are transmitted by leaf-hoppers.
 - **Bakanae:** Seedborne **fungal disease**.
 - **Blast (node and neck):** Caused by the fungus **Magnaporthe oryzae**.

Gram-negative Bacteria

- **Bacteria** can be classified into **two groups** on the basis of the **differences in the cell envelopes** and the manner in which they **respond to the staining procedure** developed by the **Danish bacteriologist Gram**.
 - Those that take up the gram stain are **Gram-positive**.
 - Others that do not take up the gram stain called **Gram-negative bacteria**.

- Gram-negative bacteria **cause infections** including **pneumonia**, bloodstream infections, wound or surgical site infections, and meningitis in healthcare settings.
- These are **resistant to multiple drugs** and are increasingly resistant to most available antibiotics. These bacteria have **built-in abilities** to find new ways to be resistant and can pass along genetic materials that allow other bacteria to become drug-resistant as well.
- Gram-negative infections include those caused by **Klebsiella, Acinetobacter, Pseudomonas aeruginosa**, and **E. coli.**, as well as many other less common bacteria.

Anti Radiation Missile: Rudram-1

Why in News

The **Defence Research and Development Organisation (DRDO)** has successfully flight tested **indigenously developed Anti Radiation Missile (Rudram-1)**.

Key Points

- **About Anti Radiation Missiles:**
 - **Aim:** These are designed to detect, track and **neutralise the adversary's radar, communication assets** and other **radio frequency sources**, which are generally part of their air defence systems.
 - These can locate and target **any radiation emitting source**.
 - These can play a **key role in neutralising any jamming platforms of the enemy** or take out radar stations thereby **clearing a path for own fighters to carry out an offensive** and also **prevent own systems from being jammed**.
 - **Components:**
 - **Inertial navigation system:** A computerised mechanism that uses changes in the object's own position — coupled with GPS, which is satellite-based.
 - **'Passive homing head' for Guidance:** A system that can detect, classify and engage targets (radio frequency sources in this case) over a wide band of frequencies as programmed.

Note:

➤ About Rudram-1:

- **Development and Test:** It is an **air-to-surface missile**, designed and **developed by the DRDO**.
 - DRDO conducted a successful test of the **New Generation Anti Radiation Missile (NGRAM)** also called the **Rudram-1** at the **Integrated Test Range (ITR)** in **Balasore** (Odisha).
 - Rudram-1 is the **first indigenous anti-radiation missile** of the country.
- **Capability:** Once the missile locks on the target, it is **capable of striking accurately even if the radiation source switches off in between**.
- **Operational Features:**
 - The missile, **integrated with SU-30 Mki aircraft**, has a **capability of varying ranges** based on the launch conditions.
 - It can be adapted for launch from other fighter jets too.
 - It can be launched from **altitudes of 500 m to 15 km** and **speeds of 0.6 to 2 mach**.

➤ Significance:

- Rudram has been developed for the **Indian Air Force - IAF's requirement** to enhance its **Suppression of Enemy Air Defence (SEAD) capability**.
- Further, **modern-day warfare** is more and more **network-centric**, which means it comprises elaborate detection, surveillance and communication systems that are integrated with the weapons systems.
- This is yet **another test of indigenously developed weapons systems** in addition to the recent tests of **Shourya missile** or Hypersonic Technology Demonstrator Vehicle (HSTDV), which is an unmanned scramjet vehicle, or the test of flight test of a **Supersonic Missile Assisted Release of Torpedo (SMART) system**.



17th Science and Technology in Society (STS) Forum

Why in News

India participated at the Science & Technology Ministerial Roundtable, organized in the 17th **annual Science and Technology in Society (STS) Forum**.

Key Points

- Science & Technology Ministerial Roundtable:
 - **Hosted by: Japan**
 - Science and Technology Ministers' Roundtable is held along with the STS forum every year.
 - **Major highlights:**
 - Deliberated on the role of international R&D collaboration,
 - Social sciences & humanities,
 - Open science.
 - **Participation: S&T heads from about 50 countries** around the world participated and explored the **opportunities** arising from **international collaborations** at the Roundtable to address the challenges posed by **Covid 19**.
 - India highlighted initiatives by India regarding **sharing of scientific data- National Data Sharing and Accessibility Policy** and an **open government data portal**.

Science and Technology in Society (STS) Forum

- The Science and Technology in Society (STS) forum was inaugurated in 2004.
- The STS forum **aims:**
 - To provide a new mechanism for open discussions on an informal basis.
 - To build a human network that would timely resolve the new types of problems stemming from the application of science and technology.
- It holds an annual meeting starting on the first Sunday of October every year, in **Kyoto, Japan**.

India's Role in Global S&T Fraternity:

- Scientific data sharing with partner nations is being considered for inclusion in the **Science Technology and Innovation Policy (STIP 2020)** being framed.

Note:



- **International Cooperation:** India gives extraordinary importance to **international cooperation** in S&T for development and for addressing challenges of health, water, energy, environment, climate change, communication, and natural disasters. **Example:**
 - India's active S&T participation in international mega-science projects such as **International Thermonuclear Experimental Reactor ITER, Thirty Metre Telescope (TMT)**.
 - **Mission Innovation:**
 - **Mission Innovation(MI)** was announced in **2015** due to **pioneering efforts by India, France, and the USA** to combat climate changes.
 - MI is a **global initiative of 24 countries and the European Union** to dramatically accelerate global clean energy innovation.
 - As part of the initiative, participating countries have committed to double their governments' clean energy Research and Development (R&D) investments over five years.
 - Encouraging private sector investment in transformative clean energy technologies.
 - The Innovation Challenges cover the entire spectrum of RD&D; from early-stage research needs assessments to technology demonstration projects.

National Data

Sharing and Accessibility Policy

- The NDSA was adopted in **2012**.
- It was a step towards making **non-sensitive government data accessible online**.
- The main thrust of the policy is to **"promote data sharing and enable access to Government of India owned data for national planning, development and awareness"**.
- The implementation guidelines for NDSAP included ideals such as "openness, flexibility, transparency, quality" of data.
- It aims to facilitate **"access to Government of India shareable data in machine-readable form"**.
- The guidelines prescribe open digital formats suitable for analysis and dissemination.
- **Open Government Data Portal:** As part of the Open Government Data (OGD) initiative, data.gov.in was launched in 2012.

- **India's Global Initiatives:**
 - **Coalitions for Disaster Resilient Infrastructure(C-DRI)** - An **international knowledge platform** where countries can collaborate to make their existing and new infrastructure strong enough to withstand natural disasters.
 - **International Solar Alliance-** An **Indian initiative** that was launched in 2015 in Paris, France with the **objective** to collectively address key common challenges to the scaling up of solar energy in ISA member countries.
- **For Covid-19:** Vaccines for coronavirus are in advanced phases of trial, and India has the capacity to supply the vaccine to a major part of humanity.
 - This is in addition to other medicine requirements that global pharmacy(India) has provided during the pandemic.

Fluoride & Iron Removal technology of CMERI

Why in News

The **Central Mechanical Engineering Research Institute (CMERI)** has transferred its High Flow Rate Fluoride & Iron Removal technology to Capricans Aqua Private Limited, West Bengal.

Key Points

- **Technology:**
 - It is a **Community Level Water Purification System** which has a Flow-Rate capacity of 10,000 Ltr/hr.
 - It uses commonly available raw materials such as **sand, gravel and adsorbent materials**.
 - It comprises a **three-stage purification process** that purifies water within permissible limits (1.5 parts per million (ppm) & 0.3 parts per million for Fluoride and Iron respectively).
 - The technology uses a combination of **Oxidation, gravity settling** (settling down of heavier impurities under gravity) and **Chemisorption** process in an Affordable Package.
 - **Chemisorption** is a kind of adsorption which involves a chemical reaction between the surface and the adsorbate. New chemical bonds are generated at the adsorbent surface.

Note:

- The integrated **backwashing** technology will help in improving the shelf-life of the filtration media in a resource rationalized manner.
 - **Backwashing** refers to pumping water backwards through the filter media, for the preventive maintenance so that the filter media can be reused.

➤ Significance:

- The number of Fluoride affected individuals are continuously increasing in a contaminated habitat in the last 50 years.
 - This has been happening in consonance with the disproportional **depletion of the Water Table**, which has led to the multiplication of the level of concentration of Fluoride in the particular region.
 - The deployment of this Community Level system at affected places can help to turn the tide against the menace of Iron and Fluorosis across the Nation.

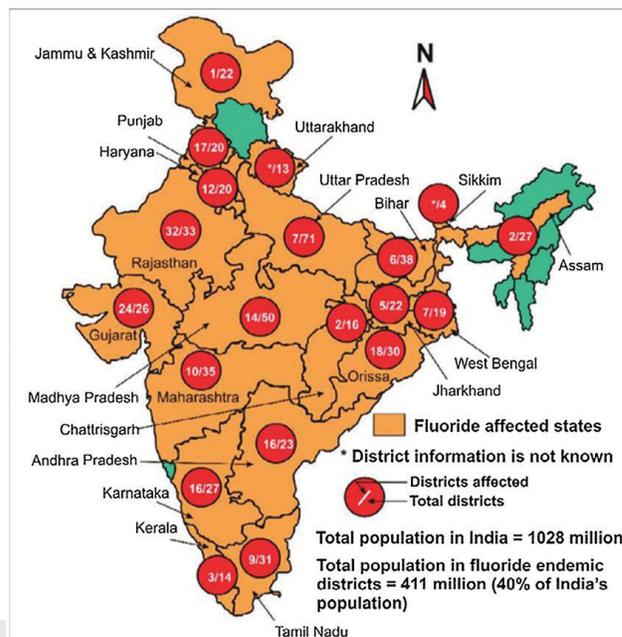
- **Cost-Effective solution** for serving the most vulnerable sections of the Nation.
- Besides, the technology is also a major thrust towards the **Atmanirbhar Bharat** campaign.
- The proliferation of this technology will also help in catalyzing **Employment Generation opportunities**.

➤ Iron in water: Iron is the most common contaminant of drinking water, followed by salinity, arsenic, fluoride, and heavy metal.

- **Rajasthan** had the highest number of rural habitations affected by contamination overall, at 16,833 in 2019.
 - **Combined arsenic and iron pollution** affect West Bengal and Assam the worst.
- **Reason:** Corrosion of pipes is a common reason why iron is found in drinking water.
- **Impacts:** As little as 0.3 mg/L concentration of iron can make the water appear brown.
 - The overload of iron may cause severe health problems such as liver cancer, diabetes, cirrhosis of liver, diseases related to heart and central nervous system, infertility etc.

➤ Fluoride in water:

- High levels of Fluoride were reported in 230 districts of 20 States of India (2016-17).
- **Reasons:** Naturally occurring fluoride in water along with the result of industrial processes.



- Owing to inaccessibility to Affordable Fluoride Removal Solutions the Fluorosis affected statistics has also witnessed an upward trajectory.

- **Impact:** There are two main types of fluorosis, namely dental and skeletal fluorosis.

- **Dental fluorosis** is caused by continuous exposure to high concentrations of fluoride during tooth development.
- **Skeletal fluorosis** is developed by the disturbance of calcium metabolism in the formation of bones of the body.
 - It results in the softening and weakening of bones resulting in deformities leading to crippling.

- **The National Programme for Prevention and Control of Fluorosis:**

- NPPCF is a health initiative **launched in the 11th Five Year Plan**, initiated in 2008-09.

- **Objectives:**

- To collect, assess and use the baseline survey data of fluorosis of the Ministry of Jal Shakti.
- Comprehensive management of fluorosis in the selected areas.

Note:

- Capacity building for prevention, diagnosis and management of fluorosis cases.

Central Mechanical Engineering Research Institute

- CMERI is a public engineering research and development institution in Durgapur, West Bengal.
- It is a constituent laboratory of the **Council of Scientific and Industrial Research**.

Council of Scientific and Industrial Research

- CSIR is the **largest research and development (R&D) organisation in India**. CSIR has a pan-India presence and has a dynamic network of 38 national laboratories, 39 outreach centres, 3 Innovation Complexes and 5 units.
- **Established:** September 1942
- **Located:** New Delhi
- CSIR is **funded by the Ministry of Science and Technology** and it operates as an **autonomous body** through the Societies Registration Act, 1860.
- CSIR covers a wide spectrum of streams and provides significant technological intervention in many areas with regard to societal efforts which include the environment, health, drinking water, food, housing, energy, farm and non-farm sectors.

Factor D Protein: Covid-19

Why in News

A new study by Johns Hopkins Medicine researchers suggests that **blocking a human protein factor D** may curtail the **potentially deadly inflammatory reactions** that many patients have to the novel coronavirus (SARS-CoV-2).

Key Points

- **Method:** The new study used normal human blood serum and three subunits of the SARS-CoV-2 spike protein to discover exactly how the virus hijacks the immune system and endangers normal cells.
- **Focus:** Team focused on two proteins, **factor H** and **factor D**, which are known as **“complement” proteins**, because they help the immune system clear pathogens from the body.
- **Findings:** The researchers discovered that **Covid-19’s** spike protein causes factor D to overstimulate the immune response, which in turn prevents factor H from mediating that response.

- **Spike proteins** on the surface of SARS-CoV-2 are the means by which it attaches to cells targeted for infection.
- The spikes first grab hold of a molecule called **heparan sulfate**.
 - **Heparan sulfate** is a large, complex sugar molecule found on the surface of cells in the lungs, blood vessels and smooth muscle making up most organs.
- Facilitated by its initial binding with heparan sulfate, SARS-CoV-2 then uses another cell-surface component, the protein known as **Angiotensin-Converting Enzyme 2 (ACE2)**, as its doorway into the attacked cell.
 - ACE2 is a protein on the surface of many cell types.
 - It is an enzyme that generates small proteins – by cutting up the larger protein angiotensinogen – that then go on to regulate functions in the cell.
- When SARS-CoV-2 attacks the ACE2 receptors to proliferate and infect more cells in the human body, it also **prevents Factor H** from using the sugar molecule to bind with cells.
 - **Factor H’s main function** is to regulate the chemical signals that trigger inflammation and keep the immune system from harming healthy cells.
- The team found that **by blocking factor D**, they were able to stop the destructive chain of events triggered by SARS-CoV-2.

Significance:

- It has provided a definite direction for research to tackle Covid-19.
- There may already be drugs in development for other diseases that can block this protein, a positive sign for the study.

IIT Delhi’s Study on Ultrafine Particles

Why in News

A recent study titled **‘Insights on the biological role of ultrafine particles of size PM<0.25: a prospective study from New Delhi’** suggested **higher cytotoxicity in human lung cells** because of fractions of **Particulate Matter (PM) 2.5** when compared to larger particulate matters.

Note:

Key Points

- **Methodology:** Data for the study was collected six times every month between January and December 2017, through a **cascade impactor measurement device**, for measuring fine particle size distribution, installed at IIT Delhi.
 - **Airborne particles in five sizes**, 2.5, 1, 0.5, 0.25 and below 0.25 micrometers (μm), **were collected** through the filters.
- **Findings:**
 - **Proportion of Ultrafine Particles:**
 - PM of **below 0.25 micrometers constituted the highest share** in the composition of PM 2.5 around the year as compared to particles of other sizes.
 - The PM<0.25 particles constituted **over 40% of PM 2.5 levels during the post-monsoon season** and **over 30% during winters and pre-monsoon periods** between March and May.
 - A decrease in total PM 2.5 levels may not be associated with a decrease in PM<0.25 levels.
 - This suggests that **total PM 2.5 levels are not good indicators** of PM<0.25 levels.
 - **Exposure to ultrafine particles** of below 0.25 micrometers was also **associated with over two-fold higher cytotoxicity** (effect of being toxic to cells), as compared to exposure to other sizes.
 - **Mass Concentration:** For PM particles of size up to 2.5 μm , 1.0 μm , 0.5 μm , and <0.25 μm , the **cumulative average mass concentration values** were found to be **highest for the post-monsoon season** (October-December), followed by winter (January-February).
 - High levels of PM 2.5 are recorded in Delhi every year during post-monsoon and winter months, which in the past have led authorities to declare a public health emergency on some days and close schools.
 - **Reasons:** The observed high levels of PM in the post-monsoon and winter months are partially due to:
 - **Burning firecrackers on Diwali** leading to excessive smoke and air pollution.
 - **Agricultural residue burning** in neighbouring states of Punjab and Haryana.
 - **Secondary formation of particles** due to favourable meteorological conditions.

- The low temperature and high humidity during winter nights enhance the fog-smog-fog cycle and result in 2-3-fold increase in PM concentration compared to pre-monsoon and South-West monsoon season.
 - **Health Impacts:** The adverse impact on health from chronic exposure to PM 2.5 is well established and includes stroke, lung cancer, and other heart and lung related problems.
 - Health impact of different size fractions within PM2.5 is not well studied yet.
 - The **National Ambient Air Quality Standard (NAAQS)** has **fixed a threshold for PM 2.5 at 60 $\mu\text{g}/\text{m}^3$ for 24 hours and 40 $\mu\text{g}/\text{m}^3$ annually**, but it does not have specific policies for ultrafine particles.
 - NAAQS was notified by the **Central Pollution Control Board (CPCB)** in 2009.
 - **Pollutants covered** under NAAQS are Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Particulate Matter (PM 10, PM 2.5), Ozone (O₃), Lead (Pb), Carbon Monoxide (CO), Ammonia (NH₃), Benzene (C₆H₆), Benzo(a)Pyrene (BaP), Arsenic(As), Nickel (Ni).

C-DAC's MoUs on Supercomputing

Why in News

Recently, the **Centre for Development of Advanced Computing (C-DAC)** under the **Ministry of Electronics and Information Technology (Meity)** has signed 13 MoUs with the **premier academic and research and development (R&D)** institutions of India.

Key Points

- **Aims behind the Move:**
 - To **establish supercomputing infrastructure** with assembly and manufacturing in India and **critical components** of the **National Supercomputing Mission**.
 - **Supercomputing** has **applications** in so many areas like computational biology and chemistry, molecular dynamics, national security, **big data** analytics, government information systems, and so on.

Note:



- It becomes a powerful tool, paired with **artificial intelligence (AI) and machine learning (ML)**, enabling it to empower people and make India ready to tackle future challenges.
- To develop **India's indigenous hardware** encompassing **exascale** chip design, design and manufacture of exascale server boards, exascale interconnects and storage including **silicon-photonics** at C-DAC to **achieve complete self-reliance** envisioned under the **Aatmanirbhar Bharat** Initiative.
- **Exascale computing** refers to computing systems capable of calculating at least 10^{18} floating-point operations per second.
- **Silicon photonics** is an evolving technology in which data is transferred among computer chips by optical rays. Optical rays can carry far more data in less time than electrical conductors.

➤ National Supercomputing Mission:

- It was **announced in 2015**, with an aim to connect national academic and R&D institutions with a grid of more than 70 high-performance computing facilities at an estimated cost of **Rs. 4,500 crores** over a **period of seven years**.
- It supports the government's vision of '**Digital India**' and '**Make in India**' initiatives.

India's Top Five Supercomputers

- **PARAM 8000**, considered to be **India's first supercomputer** was indigenously built in **1991** by C-DAC.
- **SUMMIT (USA)** is the **fastest supercomputer in the world** which can deliver upto 187,659.3 TFlop/s.

Indian Institute of Tropical Meteorology India	Pratyush - Cray XC40, Xeon E5-2695v4 18C 2.1GHz, Aries interconnect Cray Inc.	4,006.2 TFlop/s
National Centre for Medium Range Weather Forecasting India	Mihir - Cray XC40, Xeon E5-2695v4 18C 2.1GHz, Aries interconnect Cray Inc.	2,808.7 TFlop/s
Software Company (M) India	Inc1 - Lenovo C1040, Xeon E5-2673v4 20C 2.3GHz, 40G Ethernet Lenovo	1,413.1 TFlop/s
Supercomputer Education and Research Centre (SERC), Indian Institute of Science India	SERC - Cray XC40, Xeon E5-2680v3 12C 2.5GHz, Aries interconnect Cray Inc.	1,244.2 TFlop/s
Indian Institute of Tropical Meteorology India	iDataPlex DX360M4, Xeon E5-2670 8C 2.600GHz, Infiniband FDR IBM	790.7 TFlop/s

- It is being implemented by the **Department of Science and Technology (DST)** and **Department of**

Electronics and Information Technology (DeitY) through **C-DAC and Indian Institute of Science (IISc)**, Bangalore.

○ The Mission envisages:

- To improve the number of **supercomputers** owned by India.
- To **build a strong base of 20,000 skilled persons** over a period of five years who will be equipped to handle the complexities of supercomputers.
- To empower Indian academic and R&D institutions to spread over the country by **installing a vast supercomputing grid** comprising more than 70 **high-performance computing (HPC)** facilities.

Mars Opposition

Why in News

Due to the '**opposition**' effect, **Mars** will look much **brighter and bigger than usual** in October 2020.

Key Points

➤ Opposition:

- In astronomy, the opposition is the **circumstance** in which **two celestial bodies appear in opposite directions in the sky**.



○ Examples:

- When the **Moon is full**, it is in **opposition to the Sun** with the Earth approximately between them.
- A **superior planet** (one with an **orbit farther from the Sun than Earth's**) is in opposition when Earth passes between it and the Sun.
- The **opposition of a planet is a good time to observe it**, because the **planet is then typically at its nearest point to the Earth** for a given year and because it is close, the planet appears brighter in the sky.
- The planets **Venus and Mercury**, whose orbits are smaller than Earth's, **can never be in opposition to the Sun**.

➤ About Mars Opposition:

- **Mars** and the **Sun** are on **directly opposite sides of Earth**.

Note:

- **Timing:** About every 26 months, the Earth passes between the Sun and Mars and this is when the three are arranged in a straight line.
 - In 2020, while Mars' closest approach to Earth was on 6th October, the opposition happened on 13th October.
 - Significantly, the closest distance is relative and hence can vary.
 - Mars's next close approach will happen on 8th December 2022, when the planet will be 62.07 km away from the Earth.
- As per the **National Aeronautics and Space Administration** (NASA), Mars made its closest approach to Earth in 2003 in nearly 60,000 years and it will not be that close to the planet until 2287.
 - This is because the orbits of Earth and Mars are not perfectly circular and their shapes can change slightly because of gravitational tugging (pulling) by other planets. For instance, Jupiter influences the orbit of Mars.
- **Significance:**
 - Mars will outshine Jupiter, becoming the third brightest object (Moon and Venus are the first and the second respectively) in the night sky during the month of October.
 - During opposition, Mars appears as a bright star to the unaided eye and when viewed from a telescope, it grows dramatically in size. Using a telescope shows more of the planet's details such as dark and light regions, the solar ice caps and Mars' surface.

Holographic Imaging Based Method

Why in News

Scientists from New York University have developed a method using holographic imaging to detect both viruses and antibodies.

- **Holography** is a process that creates three-dimensional images called holograms using laser beams, the properties of interference and diffraction, light intensity recording, and illumination of the recording.

Key Points

- **About the Method:**

- It uses laser beams to record holograms of the specially prepared test beads.
- The surfaces of the beads are activated with biochemical binding sites that attract either antibodies or virus particles, depending on the intended test.
- Binding antibodies or viruses causes the beads to grow by a few billionth parts of a metre.
- Researchers detect this growth through changes in the beads' holograms. The test can analyse a dozen beads per second.
- **Significance:**
 - The method can test either for the virus (current infection) or antibodies (immunity).
 - The breakthrough has the potential to aid in medical diagnoses, and specifically, those related to the Covid-19 pandemic.
 - If fully realised, this proposed test could be done in under 30 minutes, is highly accurate, and can be performed by minimally trained personnel.

Aquaponics Facility

Why in News

Recently, a pilot 'Aquaponics facility' has been developed by the Centre for Development of Advanced Computing (C-DAC), Mohali at Guru Angad Dev Veterinary University (GADVASU), Ludhiana.

Key Points

- **State-of-the-art Facility:** It is equipped with advanced sensors for monitoring and automated controls of the farming system.
 - The supercomputing power is being provided by C-DAC in developing agriculture technology.
 - Funding Support was provided by the Ministry of Electronics and Information Technology (MeitY).
- **Other Features:**
 - The facility is nearly 100% organic.
 - Needs much less land for a given yield of a crop.
 - Consumes 90% less water.
 - The fish and plants grown together are more nutritious.
- **Significance:**

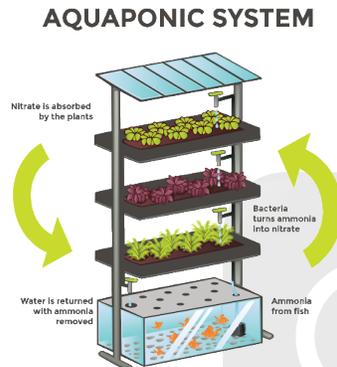
Note:



- Demand for fishes and crops (lettuce, spinach, capsicum, coriander, broccoli and some other leafy plants) is **increasing** rapidly in urban areas.
- The aspirational **rural youth will be drawn into the mainstream** with help of this technology and **agri-economy will get a boost**.
- This technique will **help the farmer in increasing the productivity** of their land.
- Also, **augment farmer's income** especially in non-coastal areas.

Aquaponics

- Aquaponics is a system that **combines hydroponics, soil-less agriculture, and aquaculture within a closed system**.



- **Hydroponics:** It is a method of growing plants in a water-based, nutrient-rich solution.
 - Hydroponics does not use soil, instead, the root system is supported using an inert medium such as clay pellets.
 - The basic premise behind hydroponics is to allow the plant's roots to come in direct contact with the nutrient solution, while also having access to oxygen, which is essential for proper growth.
- **Aquaculture:** Breeding, raising, and harvesting fish, and aquatic plants.
- There are **three biological components in the aquaponics process: fish, plants, and bacteria** (for cycling of nutrients-ammonia to nitrate conversion).
- **Process:**
 - With aquaponics, the farmer **combines the aquaculture with hydroponic vegetables** where the **fish waste provides fertilizer** for growing plants.
 - The **plants absorb nutrients and filter the water**. This filtered water is used to replenish the fish tank. This is an environment-friendly technique.

- The result is **value-added, local production of both fish and vegetables** together, using the same water.
- **Benefits:**
 - Extremely water efficient.
 - Does not require soil.
 - Does not use fertilizers or chemical pesticides.
 - Prevents aquaculture waste from polluting nearby watersheds.
 - Higher control on production leading to lower losses.
 - Can be used on non-arable lands such as deserts, degraded soil or salty, sandy islands.
 - While the creation of an aquaponics system may require a large initial investment, once it has been built it only incurs low recurring costs.
 - In addition, aquaponics can offer quality-of-life improvements because the food is produced locally using comparatively simple harvest methods and culturally appropriate crops can be grown.

Centre for Development of Advanced Computing

- C-DAC is the **premier research and development (R&D) organisation of MeitY** for carrying out R&D in IT, Electronics and associated areas.
- **India's first supercomputer PARAM 8000** was indigenously built (in 1991) by the C-DAC.
- **Various activities of C-DAC in the area of agriculture:**
 - **Electronic Nose and Vision (ENOVISION)** system for measuring quality parameters of tea and rice.
 - This work is being **extended to other products such as chilli, turmeric and environmental engineering**.
 - C-DAC has also **developed Wireless Data Logger** used for determining the fitness of perishable agricultural items.
 - **Ubiquitous Agriculture (u-Agri):** An **Internet of Things (IoT)** based system for **acquiring micro-climate information** from agricultural fields and providing personalised and localised advisories on pest and disease forewarning and irrigation scheduling, to farmers.



Note:



drishti

Environment and Ecology

Highlights

- *Zombie Fire*
- *Upgradation and Expansion of Zoos in PPP Mode*
- *Daring Cities 2020 Conference*
- *Temporary Shelters for Migratory Birds: Sambhar Lake*
- *Graded Response Action Plan*
- *Earthshot Prize*
- *Ratification of 7 Persistent Organic Pollutants*
- *Inadequate Compensatory Afforestation*
- *Anti-pollution Campaign: Delhi*
- *More Contribution to Emissions by Rich*
- *Arctic Amplification*
- *Lepidoptera Species and Climate Change*
- *Increase in Human-Leopard Conflict: Study*
- *Madhuca Diplostemon: Rediscovered in Kerala*
- *Parasitic Infections in One-Horned Rhinoceros*
- *Third Assembly of ISA*
- *Completion of Largest Arctic Expedition*
- *Human Cost of Disasters 2000-2019: UNDRR*

Zombie Fire

Why in News

According to a new study, the **fire regimes in the Arctic are changing** rapidly, with 'zombie fires' becoming more frequent in addition to fires occurring in the once-frozen tundra.

Key Points

➤ Features:

- **Zombie Fire:** It is a fire from a previous growing season that can **smoulder under the ground** which is made up of carbon-rich peat. When the weather warms, the fire can reignite. These are also known as **holdover fires**.
- The fires in the Arctic spreading to areas which were formerly fire-resistant is a more worrying feature.
 - The **tundra** is drying up and vegetation there like moss, grass, dwarf shrubs, etc. are starting to catch fire.
 - The tundra is a cold region of treeless level or rolling ground found mostly north of the Arctic Circle or above the timberline on mountains.
- In 2019 and 2020, burning occurred well above the Arctic Circle, a region not normally known to support large wildfires. Wildfires on permafrost in Siberia south of the Arctic are not uncommon.

➤ **Reasons:** The reason for this anomaly is that temperatures in winter and spring were warmer than usual during 2019-20.

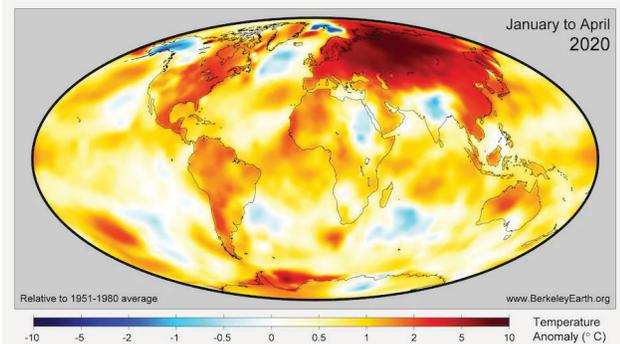
- Temperature in Siberia in 2020 had gone through the roof, with the region recording a severe **heatwave**.
- Nearly all of this year's fires inside the Arctic Circle occurred on continuous permafrost, with over half of these burning on ancient carbon-rich peat soils.

➤ Impact:

- The fires and record temperatures had the potential of **turning the carbon sink into a carbon source** and increasing **global warming**.
 - The Arctic region has a **cold body of water and permafrost**, it naturally acts as a carbon sink. On average it absorbs 58 megatons of CO₂ a year in its cold water.
 - Soils in areas of permafrost contain twice as much carbon as there is currently in the atmosphere.
 - As the climate and permafrost soils have warmed, **microbes** have started to **break down this organic carbon**, which has been frozen and fixed in the permafrost. That has led to a rise in land emissions of CO₂ and **methane**.
 - Also there will be less absorption of carbon by water with rising temperature.
- It will be a **feedback loop**: As peatlands release more carbon, global warming increases, which thaws more peat and causes more wildfires.

Note:





- Arctic fires will affect the global climate over the **long term** depending on what they burnt. That's because peatlands, unlike boreal forest, do not regrow quickly after a fire, so the carbon released is permanently lost to the atmosphere.

Arctic Region

- The Arctic region, or the Arctic, is a geographic region spreading around the North Pole.
- The Arctic Circle (66° 33'N) delimits the Arctic in terms of solar radiation.
- Based on temperature, the **monthly average temperature** in the Arctic is **below + 10 ° C** throughout the year, even in summer.
- The Arctic contains vast stores of carbon and other planet-warming **greenhouse gases** in its soils, in **peat** as well as **frozen soil** that can be freed up through combustion.
- **Peatlands** are wetlands that contain ancient, decomposed and partially decomposed organic matter.
 - Nearly half the world's peatland-stored carbon lies between 60 and 70 degrees north, along the Arctic Circle.
- **Arctic Permafrost:** It is ground that remains completely frozen at 0 degrees Celsius or below for **at least two years** and is defined solely based on temperature and duration.
 - It is composed of rock, sediments, sand, dead plant and animal matter, soil, and varying degrees of ice and is believed to have formed during glacial periods dating several millennia.



- It is mainly found near the polar zones and regions with high mountains covering parts of **Greenland, Alaska, Russia, Northern Canada, Siberia and Scandinavia**.
- Permafrost is the most threatened by climate change, Arctic regions are **warming twice as fast compared to the rest of the planet**, its current rate of temperature change being the highest in 2,000 years.

Upgradation and Expansion of Zoos in PPP Mode

Why in News

The **Ministry of Environment, Forest and Climate Change** is formulating a policy for the up-gradation and development of **Zoos in Public-Private Partnership (PPP)** across the country to encourage interaction between wildlife and humans, and help people observe and understand wildlife behaviour more closely.

- Wildlife Week, 2020 is also being celebrated. **Wildlife Week** is celebrated every year in India **between 2nd and 8th October**.
 - It started in the year 1952 with the notion to preserve fauna of the country.

Key Points

- A report of the **Central Zoo Authority (CZA)- The Energy and Resources Institute (TERI)** titled "**Economic valuation of ecosystem services, National Zoological Park, New Delhi**" was also released.
 - The study was first of its kind in India.
 - It pegs the total annual economic value of the **ecosystem services** (biodiversity conservation, employment generation, carbon sequestration, education, and research, recreational and cultural) of the zoo.
- The **CZA-Prani Mitra** awards were given to encourage the zoo officers and staff towards working for captive animal management and welfare.
- **Zoological Parks:**
 - Zoos or Zoological parks are facilities used for **ex situ conservation** of animals.
 - **Ex-situ conservation** is the technique of conservation of organisms outside their natural

Note:

habitats through different techniques like captive breeding, aquarium, botanical garden, and gene bank.

- The process of protecting an endangered plant or animal species in its natural habitat is commonly known as **in situ conservation**. It includes National Parks, Biosphere Reserves, Wildlife Sanctuaries, community reserves, sacred groves etc.
- The Zoos in India are managed as per the provisions of the **Wild Life (Protection) Act, 1972** and guided by the **National Zoo Policy, 1998**.
- The Government of India established the **Central Zoo Authority in the year 1992** to oversee the functioning of Zoos in the country and to control mushrooming of ill-planned and ill-conceived Zoos.

Central Zoo Authority

- The CZA is a **statutory body** under the Ministry of Environment, Forest and Climate Change. It was constituted in 1992 under the **Wildlife (Protection) Act, 1972**.
- **Members:** It is **chaired by the Environment Minister** and has 10 members and a member-secretary.
- **Objective:** To complement and strengthen the national effort in the conservation of rich biodiversity.
- **Functioning:** The authority provides **recognition to zoos** and is also tasked with **regulating the zoos** across the country.
 - It **lays down guidelines** and prescribes rules under which animals may be transferred among zoos nationally and internationally.
 - It **coordinates and implements programmes** on capacity building of zoo personnel, planned breeding programmes, and ex-situ research.

The Energy and Resources Institute

- TERI is a non-governmental research institute in New Delhi that specializes in the fields of energy, environment, and sustainable development.
- Established in 1974, it was formerly known as the Tata Energy Research Institute.

Daring Cities 2020 Conference

Why in News

The **Chief Minister of Delhi** will be among the five

urban leaders from around the world to speak at the 'Daring Cities 2020' conference on 7th October.

Key Points

➤ Daring Cities:

- It is a **virtual, action-oriented forum** to recognize and empower **urban leaders** – including mayors and other decision-makers, technical staff, researchers, private sector representatives, and community organizers – to disrupt business-as-usual and shift towards business-as-possible.
- It showcases and catalyzes **exemplary local climate action** to tackle the climate emergency, including ambitious resilience-building and climate mitigation efforts.
- It was **created by ICLEI** and the **Federal City of Bonn** (Germany).
 - It builds upon the experience and network established during the **Resilient Cities Congresses** convened annually from 2010 to 2019 by ICLEI and the Federal City of **Bonn**.
 - **ICLEI – Local Governments for Sustainability** is a global network of more than 1,750 local and regional governments committed to sustainable urban development.
 - Many **municipal corporations and councils from India** such as Pune Municipal Corporation, Nainital Municipal Council, North Delhi Municipal Corporation, etc. are **members**.

➤ Daring Cities 2020:

- It will be a **three-week event** (7th-28th October 2020) comprising high level and visionary speakers, a series of informative workshops and personal networking opportunities in a variety of virtual formats to accommodate different topics, time zones, internet bandwidth limits, and languages.
- The event will help to set the course to **COP26, Daring Cities 2021** and beyond.
 - The **26th session of the Conference of the Parties (COP 26)** to the **United Nations Framework Convention on Climate Change (UNFCCC)** will be held in 2021 in Glasgow, UK.

➤ India's Participation:

- Delhi CM has been invited alongside urban leaders and decision-makers from Bogota (Colombia), São Paulo (Brazil), Los Angeles (USA) and Entebbe (Uganda) to discuss multilevel action to tackle the climate emergency and environmental sustainability.

Note:



- Delhi CM will speak on how Delhi has responded to the existing climate emergency, air pollution crisis, including recent innovative solutions such as the **Pusa decomposer** and the first-of-its-kind **Electric Vehicles (EV) policy** in India to tackle air pollution in the Capital.

Temporary Shelters for Migratory Birds: Sambhar Lake

Why in News

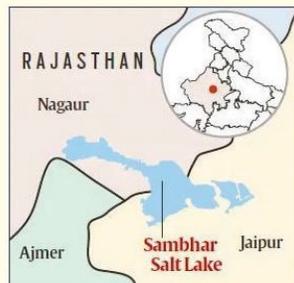
Recently, the **Rajasthan government** has decided to **build temporary shelters for migratory birds** near the **Sambhar Lake** (near Jaipur) before 2020's winter season.

Key Points

- Every year, a large number of birds **from the cold northern regions of Central Asia** come to Sambhar Lake.
- In **2019**, **more than 20,000 migratory birds** died due to **avian botulism** in the lake.
- Rajasthan High Court **took suo motu cognisance** of the mass death and asked the expert committee to carry out an **investigation** and make recommendations.
- The Court has constituted a **seven-member expert committee to study the impact of salt-forming and identify any illegal salt mining** in the lake.
- It has suggested the state government seek **the centre's support for more funds** for creating an infrastructure for the **safety and security of birds**.

Sambhar Lake

- It is **India's largest inland saline water body** located near **Jaipur in Rajasthan**.
- It is surrounded on all sides by the **Aravali hills**.
- It is the **source of most of Rajasthan's salt production**.
- Sambhar has been designated as a **Ramsar site** (recognised **wetland** of international importance) because the wetland is a **key wintering area for tens of thousands of flamingos and other migratory birds**.



Avian Botulism

- It is a **neuro-muscular illness** caused by **Botulinum** (natural toxin) that is produced by bacteria, **Clostridium botulinum**.
 - The bacteria is commonly found in the **soil, rivers, and seawater**. It affects both **humans and animals**.
 - The bacteria also **need anaerobic** (absence of oxygen) **conditions and do not grow in acidic conditions**.
- The illness **affects the nervous system of birds**, leading to **paralysis** in their legs and wings.
- The outbreaks of avian botulism **tend to occur when average temperatures are above 21 degrees celsius, and during droughts**.

Graded Response Action Plan

Why in News

Recently, the **Environment Pollution (Prevention & Control) Authority** (EPCA) has directed Delhi and neighbouring States to implement air pollution control measures under very poor and severe category air quality of the **Graded Response Action Plan** (GRAP) from 15th October 2020.

Key Points

- **Graded Response Action Plan:**
 - It was **formulated in 2016 and notified in 2017** for **Delhi-NCR** (National Capital Region) after several meetings were held by EPCA with state government representatives and experts.
 - These are institutionalised measures to be taken when air quality deteriorates, hence **works only as an emergency measure**.
 - GRAP **includes the measures** which will be taken by different government agencies **to prevent worsening of air quality** of Delhi-NCR and **prevent PM 10 and PM 2.5 levels to go beyond the 'moderate'** national **Air Quality Index** (AQI) category.
 - If air quality reaches the **severe+ stage**, GRAP suggests **shutting down schools and implementing the odd-even road-space rationing** scheme.
 - The plan requires **action and coordination among 13 different agencies** in Delhi and NCR in Uttar Pradesh, Haryana and Rajasthan.

Note:

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 Badarpur 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

➤ **Reasons for Winter Pollution in Delhi:** Apart from the other pollutions due to **overpopulation, vehicular emissions and industries**, following are the factors that make winter pollution severe:

- **Stubble Burning:** It is a traditional practice in Punjab and Haryana to clean off the rice chaff to prepare the fields for winter sowing.
- **Shifting of Jet Stream:** The southward shift of subtropical jet stream happens to cause a westward wind pattern in the northern part of India and thus spreads pollutants.
- **Stagnant Lower Level Winds:** As the winter season sets in, dust particles and pollutants in the air hardly move due to stagnant lower-level winds, hence pollutants get locked in the air and affect weather conditions, resulting in smog.

Environment Pollution Control Authority

- It was notified in **1998** under the **Environment Protection Act, 1986**.
- EPCA is a **Supreme Court mandated body** tasked with taking various measures to tackle air pollution in the NCR.

Earthshot Prize

Why in News

Recently, **Britain's Prince William** has launched a new **50-million pound Earthshot Prize**, aimed at funding

the most innovative solutions to some of the world's most pressing **environmental challenges**.

Key Points

➤ About the Prize:

- **Theme:** The Earthshot Prize is **centred around five "Earthshots"**, simple but ambitious goals for the planet, which **if achieved by 2030** will improve life for all, for generations to come.

- It is said to be the **most prestigious global prize for the environment** in history.

○ Five Earthshots:

- Protect and restore nature.
- Clean our air.
- Revive our oceans.
- Build a waste-free world.
- Fix the climate.

- **Awards Ceremony:** It will take place in different cities across the world **each year between 2021 and 2030**, at which the **five winners for each of the Earthshots** will be selected from 15 finalists.

- The **first awards ceremony** will take place in **London in autumn 2021**.

- **Benefits to Winners:** After the awards, **each winner will receive a global platform and prestigious profile**, with their stories being showcased over the decade with the ambition that their solutions lead to mass adoption, replication and scaling.

- The **1 million pounds in prize money** will support environmental and conservation projects that are agreed with a winner.

- **Eligibility:** Prizes **could be awarded to** a wide range of **individuals, teams or collaborations** of scientists, activists, economists, community projects, leaders, governments, banks, businesses, cities, and countries, **anyone** whose workable solutions make a substantial contribution to achieving the Earthshots.

- **Prize Management:** In addition to the **Prize Council**, the Earthshot Prize will be **supported by its Global Alliance**, a network of organisations worldwide which share the ambition of the Prize to repair the planet.

➤ Background:

- The launch, **backed by** popular British broadcaster and conservationist **David Attenborough**, comes

Note:



after **two years** of work by **Prince William** and the **Royal Foundation of the Duke** to develop a project which will support the global effort to protect and restore the environment.

- Recently **Sir David Attenborough** has also been conferred with **Indira Gandhi Peace Prize for 2019**.
- The Prize has been launched taking inspiration from **former USA President John F. Kennedy's Moonshot**, which united millions of people around an organising goal to put man on the moon and catalysed the development of new technology in the 1960s.

Ratification of 7 Persistent Organic Pollutants

Why in News

The **Union Cabinet** has approved the **ratification of seven chemicals** listed under **Stockholm Convention on Persistent Organic Pollutants (POPs)**.

- The **Cabinet further delegated its powers** to ratify chemicals under the Stockholm Convention to Union Ministries of External Affairs (**MEA**) and Environment, Forest and Climate Change (**MEFCC**) in respect of POPs for streamlining the procedure.

Key Points

- **Persistent Organic Pollutants: POPs** are identified chemical substances that are characterised by:
 - **Persistence in the environment.**
 - **Bio-accumulation** in the fatty acids in living organisms.
 - **Less soluble in water.**
 - Adverse **effect on human health/ environment.**
 - Exposure to POPs can lead to cancer, damage to central & peripheral nervous systems, diseases of the immune system, reproductive disorders and interference with normal infant and child development.
 - The property of **long-range environmental transport (LRET)** makes them spread widely in the atmosphere.
- **The Stockholm Convention:**
 - It is a **global treaty** to protect **human health and the environment** from POPs.

- It was opened for signature in 2001 in Stockholm (Sweden) and became effective in **2004**.
- POPs are listed in various Annexes to the Stockholm Convention after thorough scientific research, deliberations and negotiations among member countries.
- **Objectives:**
 - Support the transition to safer alternatives.
 - Target additional POPs for action.
 - Cleanup old stockpiles and equipment containing POPs.
 - Work together for a POPs-free future.
- **India ratified the Stockholm Convention in 2006** as per **Article 25(4)**, which enabled it to keep itself in a default "opt-out" position such that amendments in various Annexes of the convention cannot be enforced on it unless an instrument of ratification/ acceptance/ approval or accession is explicitly deposited with UN depository.
- The convention calls to **ban nine of the dirty dozen chemicals** (key POPs), limit the use of DDT to malaria control, and curtail inadvertent production of dioxins and furans. The convention **listed twelve distinct chemicals** in three categories:
 - **Eight pesticides** (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene)
 - **Two industrial chemicals** (poly chlorinated biphenyls and hexachlorobenzene)
 - **Two unintended by-products of many industrial processes involving chlorine** such as waste incineration, chemical and pesticide manufacturing and pulp and paper bleaching (poly chlorinated dibenzo-p-dioxins and dibenzofurans, commonly referred to as **dioxins and furans**).
- **Recent Cabinet Decision:** The Union Cabinet has approved the ratification of seven chemicals listed under **Stockholm Convention**. These chemicals are regulated under the following domestic provision for POPs:
 - **Regulation of Persistent Organic Pollutants Rules:**
 - Considering its commitment towards providing a safe environment and addressing human health risks, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** had notified the 'Regulation of Persistent Organic Pollutants Rules, in 2018 under the provisions of **Environment (Protection) Act, 1986**.

Note:

- The regulation *inter alia* prohibits the manufacture, trade, use, import and export of seven chemicals, namely:
 - Chlordecone,
 - Hexabromobiphenyl,
 - Hexabromodiphenyl ether and Hepta Bromodiphenyl Ether (Commercial octa-BDE),
 - Tetrabromodiphenyl ether and Pentabromodiphenyl ether (Commercial penta-BDE),
 - Pentachlorobenzene,
 - Hexabromocyclododecane, and
 - Hexachlorobutadiene.
- **Significance of Decision:**
 - The Cabinet's approval for ratification of POPs demonstrates **India's commitment to meet its international obligations** with regard to protection of environment and human health.
 - It also indicates the **resolve of the Government to take action on POPs** by implementing control measures, develop and implement action plans for unintentionally produced chemicals, develop inventories of the chemicals' stockpiles and review.
 - The ratification process would enable India to access the **Global Environment Facility (GEF)** financial resources.

Global Environment Facility

- GEF was established with the **Rio Earth Summit** of 1992.
- **Headquarter:** Washington, D.C., USA.
- The GEF is jointly managed by the **United Nations Development Programme (UNDP)**, the **World Bank**, and the **United Nations Environment Programme (UNEP)**.
- The financial mechanism was established to help tackle our planet's most pressing environmental problems.
- It provides **funds to the developing countries and transition economies** for projects related to climate change, biodiversity, the ozone layer, etc.
- It is a **financial mechanism for 5 major international environmental conventions:**
 - The **United Nations Framework Convention on Climate Change (UNFCCC)**,
 - The **Minamata Convention on Mercury**.

- The **United Nations Convention on Biological Diversity (UNCBD)**,
- The **Stockholm Convention on Persistent Organic Pollutants (POPs)**,
- The **United Nations Convention to Combat Desertification (UNCCD)**, and

Inadequate Compensatory Afforestation

Why in News

According to a recent **study on compensatory afforestation** in lieu of forest diversion for development of projects in **Himachal Pradesh's Kinnaur district**, only 10% of saplings said to be planted were actually found on the site and their survival rate was as low as 3.6%.

- The study has been carried out by **Himdhara Environment Research and Action Collective**. It is **based on government data and ground research** and was conducted **between 2012 and 2016**.

Key Points

- **Data Analysis:**
 - As of 31st March 2014, the total area demarcated for **compensatory afforestation** was 1,930 ha in lieu of 984 ha of forest land diverted for non-forest activities, including roads, hydro-projects, transmission lines, etc.
 - The total diverted forest land in Kinnaur had 11,598 standing trees, belonging to 21 species.
 - The majority of the trees felled were coniferous, dominated by cedar (3,612 felled) and **near-threatened chilgoza pines** (2,743).
 - Between 2002 and 2014, of the Rs.162.82 crore collected under **Catchment Area Treatment (CAT) plan** funds of Kinnaur's projects, only 36% had been spent till 31st March 2014.
 - CAT plan funds are budgeted as **mitigation measures for hydroelectric power projects**.
 - More than 90% of the diversion of forest in Kinnaur takes place for the development of hydropower projects and transmission lines.
 - Himachal Pradesh has the **highest installed capacity of hydropower projects of 10,000 MW in the country** and located in Sutlej basin,

Note:



Kinnaur is the **state's hydropower hub** with 53 planned hydropower projects.

- **Compensatory Afforestation:**
 - According to **Compensatory Afforestation Management and Planning Authority (CAMPA)** rules, for every hectare of forest land diverted, double the area of 'degraded' lands are used as sites for 'compensatory afforestation'.
 - Every time forest land is diverted for non-forest purposes such as mining or industry, the **user agency pays for planting forests over an equal area of non-forest land, or when such land is not available, twice the area of degraded forest land.**
 - As per the rules, **90% of the Compensatory Afforestation Fund (CAF) money is to be given to the states while 10% is to be retained by the Centre.**
 - The **funds are used for** CAT, assisted natural generation, forest management, wildlife protection and management, relocation of villages from protected areas, managing human-wildlife conflicts, training and awareness generation, supply of wood saving devices and allied activities.
- **Associated Challenges:**
 - One of the reasons why the forest department is **unable to fulfil the target is because there's simply no land available** for the compensatory afforestation.
 - A large part of Kinnaur is **rocky and a cold desert where nothing grows.**
 - Around **10% of the district is already forested** and the **rest is either used for agriculture or are grasslands.**
 - Many of the plots **carved out for afforestation are actually grasslands** which are used by the villagers for **grazing cattle.**
 - In many instances, the villagers uproot the saplings because they **do not want the grassland converted to a forest.**
 - This lack of land for afforestation means that **once a forest has been felled, it is often lost permanently.**
 - The authorities only look at identifying plots of land where afforestation can take place just **because it is mandated which makes the concept faulty.**
 - **Socio-economic needs are not considered** and there is also **no monitoring** of the afforestation as well.

Compensatory Afforestation

Fund Management and Planning Authority

- It works as a **national advisory council** under the chairmanship of the Union Minister of Environment, Forest and Climate Change for monitoring, technical assistance and evaluation of compensatory afforestation activities.
- **Objectives of CAMPA:** To promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses.

Anti-pollution Campaign: Delhi

Why in News

- The Delhi Government has recently launched a major anti-pollution campaign, **Yuddh Pradushan Ke Viruddh**, which includes a **tree transplantation policy**, construction of a **smog tower** at Connaught Place (Delhi), promoting **Electric Vehicles (EVs)** and preventing **stubble burning.**
- This will help in combating the **poor air quality of Delhi** which deteriorates even more in the winter season.

Key Points

➤ Tree Transplantation Policy:

- **Tree transplantation** refers to uprooting a tree from a particular spot, lifting it, and then planting it at another spot.
- Under this policy, a **minimum of 80% of trees affected by any developmental project, will be transplanted.** Also, a minimum of 80% of the transplanted trees **should survive** and **ensuring this would be the responsibility of the agencies** that will take permission from the government.
- This transplantation will be **in addition to the existing compensatory afforestation** of planting of 10 saplings for every tree that is cut.
- A panel of the **agencies that excel in the task of transplantation** and a **dedicated Tree Transplantation Cell** will also be formed by the government.
- **Benefits:**
 - Transplantation will **ensure the conservation of old trees** because planting a new sapling as a substitute for an existing fully grown tree does not adequately counter the adverse environmental effect of cutting the existing tree.

Note:



- Also, many old trees have a **symbolic or heritage value which needs to be preserved.**
- **Limitations:**
 - **Low Success Rate:** Transplantation is a complicated process with a **success rate of around 50%**. The survival rate of a transplanted tree depends on soil type as a tree growing on the Delhi ridge is unlikely to survive in the Yamuna floodplain.
 - **Expensive:** It costs around **Rs. 1 lakh to transplant an average-sized tree.**
- **Smog Tower:**
 - A smog tower, which will act as a **mega air purifier**, will also be installed in Delhi to counter the persistent issue of smog in Delhi **as per the November 2019 order of the Supreme Court** to the Delhi government and the Central Pollution Control Board.
 - The towers to be installed in Delhi will be the result of a **collaboration between the IITs at Mumbai and Delhi, and the University of Minnesota.**
 - Smog towers have been experimented with in recent years in cities in the Netherlands, China, South Korea and Poland. The **first such tower was erected in 2015, in Rotterdam, Netherlands**, created by **Dutch artist Daan Roosegaarde.**
 - The **world's largest air-purifying tower is in Xi'an, China.**
 - The Tower will suck the polluted air from above and release clean air from the bottom.
 - **Limitations:**
 - Many experts have claimed that **due to the large volume of air outdoors**, smog towers are **not efficient** in cleaning the air per se.
 - Even in the case of China, there is **insufficient data to support the effectiveness** of its smog towers.
 - An expert panel has estimated that Delhi will need a total of 213 smog towers to battle the pollution crisis which will be **very expensive** as each tower will cost around 20 crore rupees.
- **Electric Vehicles:**
 - The government **aims to make EVs account for a quarter of the new vehicles registered in the capital by 2024.**
 - EVs will gain from **purchase incentives, scrappage**

benefits on older vehicles, **loans at favourable interest** and a **waiver of road taxes.**

- Recently, the Delhi government notified the **Electric Vehicles Policy 2020** which lays the maximum emphasis on replacement of two-wheelers, public transport and shared vehicles and goods-carriers instead of private four-wheelers, with EVs.
- Apart from these steps, the campaign also **focuses on cutting the deadly smoke from thermal plants and brick kilns** in Delhi as well as on the **chemical treatment of stubble burning** from nearby States.

Air Pollution in Delhi

- According to air quality data compiled by the **World Health Organisation (WHO)**, **Delhi is among the world's most polluted cities.**
- **Particulate matter**, PM2.5 and PM10 in Delhi, **exceed national standards** and the more stringent WHO limits.
 - Delhi **needs a 65% reduction** to meet the national standards for PM2.5.
- Delhi's toxic air also contains high doses of **sulphur dioxide and nitrogen oxide.**
- The **lack of wind worsens** the pollutant concentration.
- The Ministry of Earth Sciences published a research paper in October 2018 attributing almost 41% to vehicular emissions, 21.5% to dust and 18% to industries.
 - Emission testing of vehicles is only 25%.
- According to the WHO, **India has the world's highest death rate from chronic respiratory diseases and asthma.** Air pollution also **impacts the environment** through reduced visibility, acid rain, and formation of ozone at the tropospheric level.
- **Reasons for Deteriorating Air Quality of Delhi:**
 - Stubble Burning.
 - Vehicular Emission.
 - Weather.
 - High Population Density.
 - Lack of Infrastructure.
 - Construction Activities and Open waste burning.
 - Thermal Power Plant and Industries.
 - Firecrackers.
 - Diesel generators.
 - Dust Storm from Gulf countries.

Note:

More Contribution to Emissions by Rich

Why in News

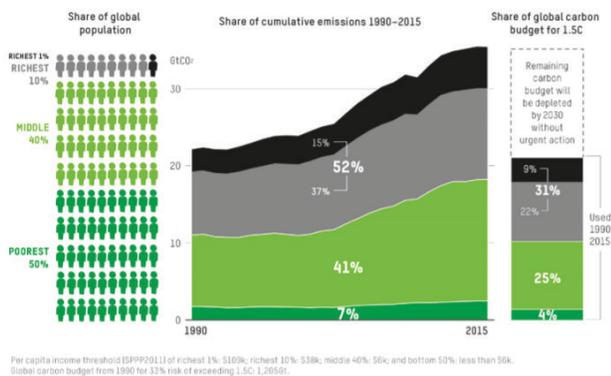
Recently, the **Oxfam International** and the **Stockholm Environmental Institute (SEI)** has released a report titled “**Confronting Carbon Inequality**”, which highlights that a **rich person contributes more to the climate crisis** than a poor person.

- Oxfam is a **global organisation** with affiliates in 20 countries, working together to **end the injustice of poverty**.
- SEI is an **international non-profit research and policy organisation** which promotes **sustainability** in policy making.

Key Points

- **Data Analysis from 1990 to 2015:**
 - **Cumulative Emissions:** The richest 1% of humanity accounted for 15% of cumulative emissions, while the poorest 50% accounted for only 7%.
 - **Depletion of Global Carbon Budget:** The richest 10% depleted the global carbon budget by 31% and the poorest 50% used only 4% of the carbon budget.
 - A carbon budget is a **cumulative amount of carbon dioxide (CO₂) emissions permitted over a period of time** to keep within a certain temperature threshold.
 - **Emissions Growth:** While the richest 10% accounted for 46% of emissions growth, the poorest 50% accounted for only 6%.

Figure 1: Share of cumulative emissions from 1990 to 2015 and use of the global carbon budget for 1.5C linked to consumption by different global income groups



- About half of the emissions of the richest 10% are associated with North America and the **European Union (EU)**.

➤ Indian Comparison with Others:

- An **Indian emitted only 1.97 tonnes of CO₂ (tCO₂) annually**, while **Americans and Canadians** both emitted well **over 16 tCO₂**.
- The per capita CO₂ emissions of the richest 10% of Indians were about 4.4 tonnes in 2018, in comparison to the per capita emissions of the richest 10% Americans were 52.4 tonnes, **almost 12 times that of the richest Indians**.
- **India's per capita emissions were a fraction of not just the EU (6.78 tCO₂/person), but also China (7.95 tCO₂/person), making it the lowest per capita emitter amongst the world's large economies.**

➤ Highlighted Concerns:

- The **global carbon budget is being rapidly depleted** due to the increasing consumption of the rich in the **name of dignity and a decent standard of living**.
 - Of this increased consumption, the largest share of emissions by the rich was from flights and cars, including private jets, luxury SUVs and sports cars.
- Also, the report briefly acknowledged the **intersectionality of income inequality and the climate crisis with factors such as race, class, gender, caste and age**.
 - For example, gender pay inequity meant that men earned higher wages than women which led to higher spendings and more travels.
- **Global consumption and production models are driven by tenets of capitalistic growth and neoliberalism** and it is impossible to decouple those systems from resource extraction and environmental degradation.
- Moderate measures such as **carbon tax** and **non-binding climate commitments** from corporations and countries are inadequate while considering the scale of transformation.

➤ Suggestions:

- **Systemic change** rather than a sole focus on individual action.
- **Clip emissions** of the richest 10% and **reduce the per capita footprint** to the 1.5°C-consistent level by 2030 which would cut annual carbon emissions by over a third.

Note:

- Call for “**new economic models that do not depend on the endless growth in consumption of the already affluent**”.
- This is a departure from the mainstream discourse on climate solutions which tends to focus on changes in behaviour and personal habits such as driving **electric vehicles** and consuming less meat.
- **Comprehensive approaches** like the **Green New Deal** (popular in the USA in 2018 and different from the **European Green Deal**), which might help avert the worst of the climate crisis amid widespread income inequality and imbalanced power structures.
- The Green New Deal **combines a series of goals including 100% renewable energy, along with full access to health care and guaranteed wages.**
- The **United Nations Conference on Trade and Development (UNCTAD)** echoed the same in **2019 and called for a global iteration of a Green New Deal** through a large-scale investment push led by the public sector instead of the private sector.
- **Wealth redistribution** via taxes on the wealthiest, **rapid decarbonisation** via large-scale public investments in clean energy and low carbon transportation, **mass mobilization** and the **creation of a social safety** net through measures like jobs guarantee programme and universal healthcare.

Arctic Amplification

Why in News

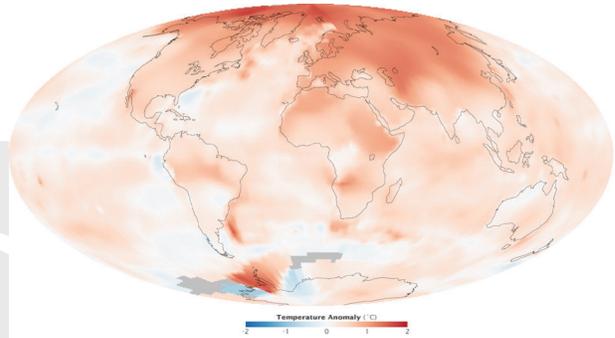
A team of scientists have identified **iodic acid (HIO₃)** as a novel driver of new **aerosol** particle formation in the Arctic which is responsible for **Arctic Amplification or Arctic Warming**. Presence of iodic acid in the region had not been observed previously.

- These aerosol particles influence the formation of clouds. As these **clouds reflect solar radiation (known as Aerosol Radiative Forcing)** but also retain heat on the Earth’s surface, they have an influence on the warming of the Arctic.

Key Points

- **About:**

- Over the past 30 years, the Arctic has warmed at roughly twice the rate as the entire globe, a phenomenon known as **Arctic amplification**.
- This means that **global warming** and **climate change** are **impacting the Arctic more than the rest of the world**.
- Global temperatures from 2000–2009 were on average about 0.6°C higher than they were from 1951–1980. The Arctic, however, was **about 2°C warmer**.
- Scientists first started to see evidence of changes in Arctic climate in the 1980s. Since then, the changes have become **much more pronounced**.



➤ **Reasons:**

- **Change in Albedo:**
 - Albedo is a measure of how much light that hits a surface is reflected without being absorbed.
 - When bright and reflective ice (with more albedo) melts, it gives way to a darker ocean (lowering albedo); this amplifies the warming trend because the ocean surface absorbs more heat from the Sun than the surface of snow and ice.
- **Changing Ocean Currents:**
 - Ocean currents normally bring in warmer water from the Pacific, and colder water exits out of the Arctic into the Atlantic.
 - But those currents may be changing because more melting ice is injecting the Arctic Ocean with freshwater. The missing ice also exposes the surface waters to more wind. This mixes up colder freshwater at the surface and warmer saltwater below, raising surface temperatures and further melting ice.
- **Changing Weather:**
 - Ocean currents drive the powerful polar jet stream, which moves hot and cold air masses

Note:

around the Northern Hemisphere. This is a product of the temperature differences between the Arctic and the tropics.

- But as the Arctic warms, the jet stream now undulates wildly north and south. This has been **injecting the Arctic with warm air**.
- **Thunderstorms** are also much more likely to occur in the tropics than the higher latitudes. The storms transport heat from the surface to higher levels of the atmosphere, where global wind patterns sweep it toward higher latitudes.
 - The abundance of thunderstorms in tropics creates a near-constant flow of heat **away from the tropics towards the Arctic**.

➤ Impact in the Arctic:

- The floating sea ice cover of the Arctic Ocean is shrinking, especially during summer.
- Snow cover over land in the Arctic has decreased, notably in spring.
- In addition, frozen ground in the Arctic, known as **permafrost**, is warming and in many areas thawing.

➤ Comparison with Antarctica:

- There is **no Antarctic amplification**. Antarctic warming has been similar to the global average, although some parts are warming much faster.
- **Reason:** Antarctica is surrounded by the **vast Southern Ocean**, which is soaking up much of the atmosphere's excess heat.

➤ Effects Worldwide:

- Higher temperature will cause a **Sea-Level Rise** globally that in turn has impacts like the destruction of ecosystems, displacement, loss of life and property etc.
- Arctic permafrost thaw is also releasing the potent **greenhouse** gas methane causing profound **global warming effects**.
- Arctic wildfire, called **Zombie Fire** intensity is also increasing each year as thawing ground dries out.

➤ Other Related Information:

- The **Arctic Council** is the leading **intergovernmental forum** promoting cooperation, coordination and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.



- Recently, the Indian Prime Minister at **Eastern Economic Forum (EEF)**, mentioned **India's willingness to play a significant role in the Arctic Council**.

Lepidoptera Species and Climate Change

Why in News

According to a recent study, **rising average temperatures in the Himalayan region** have driven several dozen **species of butterfly and moth to habitats higher up** the mountains.

- The **Himalayas** are home to more than **35% of Lepidoptera species** (butterflies and moths) found in India.

Key Points

➤ Lepidoptera:

- Lepidoptera is the order of insects that includes butterflies, moths and skippers.
- The name Lepidoptera is derived from the **Greek**, meaning "**scaly winged**," and refers to the **characteristic covering of microscopic dustlike scales on the wings**.
 - Due to their **day-flying habits and bright colours**,

Note:

the **butterflies** are more familiar than the chiefly **night-flying and dull-coloured moths**, but the latter is far more varied and abundant.

- The **skippers** are a **worldwide group intermediate** between butterflies and moths.

○ **Importance:**

- They are ecologically important because they **transform large amounts of plant matter into the animal matter** and in turn **serve as food** for many other groups of animals.
- The adults of many species are important for their **role in pollination**, which occurs as they visit flowers for nectar.

➤ **About the Study:**

- It was **carried out by the Zoological Survey of India (ZSI)** and was **funded by the Ministry of Environment, Forest and Climate Change**.
- The four-year study **tracked 1,274 species of moth and 484 species of butterfly** in **Jammu and Kashmir (J&K), Himachal Pradesh, Uttarakhand, Sikkim, North Bengal, and Arunachal Pradesh**.
- It also **identified 80 new species** of butterfly and moth.

➤ **Findings of the Study:**

- At least 49 species of moth and 17 species of butterfly have shown “**considerable new upward altitude records**”, with a difference of more than 1,000 metres between their current and previously recorded mean habitat altitudes.
 - Few **species of moths** like the mulberry silkworm moth and tiger moth have started to inhabit altitudes **more than 2,000 m higher** than the previous mean.
 - **Butterflies** like the Common Map, Tailless Bushblue and the Indian Red Admiral butterfly have seen the **difference ranging from 900-1500 m** in their habitats.
- The extension of the range of Lepidoptera due to climate change has been **observed all over the world** and **Indian data from this evidence-based study confirms this trend** and shows which species are moving, and how.
 - Butterflies are **sensitive species that are extremely susceptible to changes** in climate. They are, therefore, **good indicators of long-term change** in climatic conditions.

- The ZSI **predicts a decline of as much as 91%** for example, **in the suitable area for the Notodontidae family of moths** in J&K, Himachal, and Uttarakhand by 2050.

- The findings will be **used as a baseline indicator to track the impact of climate change** on animal species over the coming decade.

- The study has **identified two species richness hotspots:**

- One is in **West Bengal’s Darjeeling hills**, where more than 400 species records were documented.
- Another one is in **Kumaon, Uttarakhand**, where more than 600 species records were found.

- The study also **revealed an increase in the richness of Lepidoptera biodiversity from the Western to the Eastern Himalayas**.

➤ **Factors behind the Upward Movement:**

- **Receding ice caps and glaciers** leading to a **scarcity of water** in the Himalayas has been a major reason for the altitudinal shift of the Lepidoptera.
- The **increase in average temperature** has resulted in an **altitudinal shift in vegetation** that once grew at lower altitudes in the Himalayas are now found only higher up in the mountains.
- **Increasing human habitation** has contributed to the shift as well.
 - For example, Shimla and Darjeeling are two big hotspots of rich butterfly diversity but **expanding towns have encroached on virgin territory**, and the space for the butterfly has shrunk.
- **Poaching and selling** have led to the **reduced or negligible population at the lower altitudes**.
 - Butterflies like the Red Apollo are highly prized by collectors and are often poached. One butterfly sells for up to 100 pounds on the international market.

Increase in Human-Leopard Conflict: Study

Why in News

A study conducted across Karnataka indicates that the **human-leopard policy guidelines** have had little impact on the ground and it has not led to decrease in human-leopard conflict.

Note:



- The **guidelines for human-leopard conflict management** were brought out by the Government of India in April 2011 **to reduce conflict with leopards, discourage their translocation, and suggest improved ways of handling emergency conflict situations.**

Key Points

- **Findings of the Study:**
 - The number of leopards captured per month **increased more than threefold** (from 1.5 to 4.6) since 2011.
 - Similarly, there was a **threefold increase in the number of leopards translocated** per month (from 1 to 3.5).
 - **Translocation** is the managed movement of live indigenous plants or animals (taonga) from one location to another.
 - Reasons for capture and translocation of leopards (in order of prominence):
 - Livestock depredation (38.1%)
 - Leopards rescued from snares and wells (15.7%),
 - Anxiety caused owing to leopard sightings in human habitations (13.7%),
 - Leopards entering human dwellings (10.9%).
 - Human injuries (4.5%)
 - Human deaths (2%)
- **Other Related News:**
 - A recent study by **TRAFFIC** India on the seizure and mortality of 'common leopards' (*Panthera pardus fusca*) revealed that of the total of 747 leopard deaths between 2015-2019 in India, 596 were linked to illegal wildlife trade and activities related to poaching.
 - The Government of India launched the **First National Protocol on Snow Leopard Population Assessment** in 2019, to mark the occasion of **International Snow Leopard Day (23rd October)**.
 - In 2014, a **national census of leopards around tiger habitats** was carried out in India except for the northeast.  7,910 individuals were estimated in surveyed areas and a national total of **12,000-14,000** estimated.

Common Leopard (*Panthera pardus*)

- **Habitat:** It occurs in a wide range in sub-Saharan Africa, in small parts of Western and Central Asia, on the Indian subcontinent to Southeast and East Asia.
 - The Indian leopard (*Panthera pardus fusca*) is a leopard widely distributed on the Indian subcontinent.
- **Threats:** Habitat loss and fragmentation, poaching for the illegal trade of skins and body parts, and persecution due to conflict situations.
- **Conservation Status:**
 - **IUCN Red List:** Vulnerable
 - **CITES:** Appendix I
 - **Indian Wildlife (Protection) Act, 1972:** Schedule I

Madhuca Diplostemon: Rediscovered in Kerala

Why in News

Recently, *Madhuca diplostemon* tree has been rediscovered after a gap of more than 180 years from a sacred grove in **Kollam district, Kerala.**

Key Points

- The tree is locally known as **Kavilippa** in Malayalam.
- It has been identified by the scientists at the **Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) at Palode, Kerala.**
- The **threatened species of the Western Ghats** was believed to be extinct.
- This is the **second time** a tree of this species has ever been located and **only one mature tree has been found so far**, which makes this remarkable rediscovery **extremely valuable from a scientific, environmental and conservation point of view.**
 - In **1835, Robert Wight, a surgeon-botanist with the East India Company**, found the first specimen.
 - Since its original collection, specimens of the tree were never collected again, neither from its locality nor elsewhere, and botanical exploration 

Note:

tions in Eastern and Western Ghats failed to locate the species.

- The **International Union for Conservation of Nature (IUCN)** has included it in the **endangered** species list.
 - However, since there is only one specimen left in a single locality, it is **eligible to be categorised as 'Critically Endangered'**.
- The JNTBGRI is planning to undertake the **ex-situ conservation** of this species through the **institute's species recovery programme**.

Parasitic Infections in One-Horned Rhinoceros

Why in News

Recently, the **World Wildlife Fund (WWF) India** has published reports titled '**Prevalence of Endoparasitic Infections in Free-Ranging Greater One-Horned Rhinoceros**' for Assam and West Bengal.

Key Points

- **Poaching** is believed to be the **main cause of death** in rhinos, however, they also die of natural causes which have not been studied in great detail.
- Since **2017**, the **Rhino Task Force of Assam** and **WWF India** have been undertaking steps to study pathogens found in fresh rhino dung samples in Assam, Uttar Pradesh, and West Bengal.
 - Before this, there was no systematic study on the prevalence of disease-causing parasites and diseases caused by these in the rhino population in India.
- According to the researchers, **habitat degradation** can lead to an **increased exposure to pathogens**.
 - Due to increasing livestock pressure on protected areas, there is a possible threat of pathogens getting transferred from domestic animals to wild animals.
- From the samples from Assam and West Bengal, the study concluded that **parasites from four genera were present in an estimated 68% of India's rhino population**.
 - The **overall prevalence of endoparasites** was **58.57% in Assam** and **88.46% in West Bengal**; results from UP are pending.



- **Endoparasites are parasites that live in the tissues and organs of their hosts**, such as tapeworms, flukes, and protozoans of vertebrates.

Greater One-Horned Rhino

- There are **three species of rhino in Asia** — **Greater one-horned (*Rhinoceros unicornis*)**, **Javan** and **Sumatran**.
- **Poaching** for the horns and **habitat loss** are the two greatest threats to the survival of Asia's rhinos.
- The **five rhino range nations (India, Bhutan, Nepal, Indonesia and Malaysia)** have signed a declaration 'The New Delhi Declaration on Asian Rhinos 2019' for the conservation and protection of the species.
- **Protection Status:**
 - **Javan** and **Sumatran Rhino** are **critically endangered** and the **Greater one-horned (or Indian) rhino** is **vulnerable** in **IUCN Red List**.
 - All three listed under **Appendix I (CITES)**.
 - **Greater one-horned rhino** is listed under the **Schedule I of the Wildlife Protection Act, 1972**.
- **Habitat of Greater One-Horned Rhino:**
 - The species is restricted to small habitats in Indo-Nepal terai and northern West Bengal and Assam.
 - In India, rhinos are mainly found in **Kaziranga NP, Pobitora WLS**, Orang NP, Manas NP in Assam, Jaldapara NP and Gorumara NP in West Bengal and **Dudhwa TR** in Uttar Pradesh.
- **Conservation Efforts by India:**
 - Recently, the **Ministry of Environment Forest and Climate Change (MoEFCC)** has begun a project to create **DNA profiles of all rhinos** in the country.
 - **National Rhino Conservation Strategy:** It was launched in 2019 to conserve the greater one-horned rhinoceros.
 - **Indian Rhino Vision 2020:** Launched in 2005, it is an ambitious effort to attain a wild population of at least 3,000 greater one-horned rhinos spread over seven protected areas in the Indian state of Assam by the year 2020.

Third Assembly of ISA

Why in News

Recently, **India and France** have been re-elected as the President and Co-President of the **International Solar**

Note:

Alliance (ISA) for a term of two years at the virtual third Assembly of ISA.

- The first two assemblies were held in **India in 2018 and 2019**.

Key Points

- The Assembly approved institutionalising ISA's engagement with the private and public corporate sector through the **Coalition for Sustainable Climate Action (CSCA)**.
- **Various solar awards** were conferred on countries as well as institutions.
 - The **Visvesvaraya award** recognises the countries with a maximum floating solar capacity in each of the four regions of ISA, which are:
 - Asia Pacific Region.
 - Africa Region.
 - Europe and others Region.
 - Latin America and Caribbean Region.
 - The **Kalpna Chawla award** for outstanding contribution of scientists and engineers working in the field of **solar energy**.
 - The **Diwakar award** recognises organisations and institutions that have been working for the benefit of differently-abled people and have maximised the use of solar energy in the host country.
- The Assembly was **presented the report prepared by the World Resources Institute (WRI) which identifies the sources of funds, opportunities and constraints, in scaling up solar investments and the contribution of ISA in assisting Member countries**.
 - The ISA will work with WRI to develop a roadmap for **mobilisation of USD 1 trillion by 2030**.
- In the wake of the global **pandemic**, ISA responded by setting up **ISA CARES** (like **PM-CARES** in India), an initiative dedicated to the deployment of solar energy in the healthcare sector.
 - The initiative **aims to solarize one primary health sector** in each district of the target member countries.
- The ISA Secretariat has launched a **Seventh Programme on Solarising Heating and Cooling systems**.
 - Demand for cooling alone outpaced solar deployment in 2017.
 - Heating and cooling systems have scope to directly convert solar radiation and at higher efficiency levels.

- **SAARC Development Fund's** technical assistance along with the **ISA Technical Assistance** is proposed to be implemented jointly with the **Asian Development Bank**.
- The ISA has recently signed a tripartite agreement with the **World Bank** and the Government of India and is now actively involved in preparing a vision and **implementation plan for "One Sun, One World, One Grid" Initiative** to harness the power of interconnected grids for enabling energy transition to a low-carbon world.
- **India's Perspective and Highlights:**
 - The President of the ISA Assembly, **India's Power and New and Renewable Energy Minister** appreciated the Alliance Members coming together to work for combating climate change.
 - He also **highlighted various activities and programmes** initiated by ISA since the 2nd Assembly like the **development of a pipeline** of more than USD 5 billion, **aggregated demand** for more than 270,000 solar pumps across 22 countries, etc.
- **France's Role:**
 - France has **committed 1.5 billion Euros** for financing solar projects in ISA member states up until 2022.
 - The **first project under the Solar Risk Mitigation Initiative (SRMI) is being launched in Mozambique** with the support of **France and the European Union (EU)**.
 - SRMI will help mobilise billions in private investment to finance more than 10 GWs of solar projects.
 - In the frame of the **ISA's Solar Technology Application Resource Centre (Star-C) programme**, the **French National Institute for Solar Energy (INES)** will launch a specific program for the small island states of the Pacific.

International Solar Alliance

- It is an **Indian initiative** that was launched by the **Prime Minister of India and the President of France** on **30th November 2015 in Paris**, France on the side-lines of the **Conference of the Parties (COP-21)**, with **121 solar resource-rich countries** lying **fully or partially between the tropic of Cancer and tropic of Capricorn** as prospective members.
- **Objective:** To collectively address key common challenges to the scaling up of solar energy in ISA member countries.

Note:

- **Members:** Till now, **87 countries** have signed the **Framework Agreement** of the ISA and of these **67** have deposited their instruments of ratification.
 - **Nicaragua**, a **Central American country** is the **87th** and the **latest** country to sign the agreement.
- The Government of India has **allotted 5 acres of land** to the ISA in **National Institute of Solar Energy (NISE)** campus, Gurugram and has released a **sum of Rs. 160 crore** for creating a corpus fund, building infrastructure and meeting day to day recurring expenditure of the ISA up to the year 2021-22.

Completion of Largest Arctic Expedition

Why in News

- Year-long **MOSAic Expedition** began from Norway and concluded at the port of Bremerhaven, Germany.
- It was a \$150 million project organized by the **Alfred Wegener Institute, Germany**.

Key Points

- The **Multidisciplinary Drifting Observatory for the Study of Arctic Climate (MOSAic)** is an international research expedition to study the physical, chemical, and biological processes that coupled the Arctic atmosphere, sea ice, ocean, and ecosystem.
- MOSAic is the **first year-round expedition** into the **central Arctic exploring the Arctic climate system**.
- During the **year-round operation of research**, the distributed regional network of observational sites were set up on the sea ice surrounding the ship **icebreaker RV Polarstern**.
 - The icebreaker **RV Polarstern** is a German Research Vessel which is mainly used for research in the Arctic and Antarctica.
- The results of MOSAic will contribute to enhance understanding of the regional and global consequences of Arctic climate change and sea-ice loss and improve weather and climate predictions.
- **Significance:**
 - The region's sea ice has been steadily shrinking in recent decades, and summer ice coverage this year was the second lowest since satellite measurements began in 1979.

- Warming has also caused **sharp declines** in older and thicker ice.
- The information is collected about the ocean, ice, clouds, storms and ecosystems of the Arctic would prove invaluable in helping scientists understand the region, which is **warming faster** than any other part of the planet.

Human Cost of Disasters 2000-2019: UNDRR

Why in News

In a new report "**The Human Cost of Disasters 2000-2019**", the United Nations pointed out that climate change is largely to blame for a near doubling of natural disasters in the past 20 years.

- The report is published by the **United Nations Office for Disaster Risk Reduction (UNDRR)**. The report **did not touch on biological hazards and disease-related disasters** like the coronavirus pandemic.
- **International Day for Disaster Risk Reduction** is observed on **13th October** every year.

Key Points

- **Findings:**
 - **7,348 major disaster** events had occurred between 2000 and 2019, **affecting 4.2 billion people** and **costing** the global economy some **USD 2.97 trillion**.
 - The figure is **far more than the 4,212** major natural disasters recorded between **1980 and 1999**.
 - **6,681 climate-linked disasters** had been recorded in the period 2000-19, up from 3,656 during the previous 20-year-period.
 - Climate-related disasters include disasters categorized as meteorological, climatological, or hydrological.
 - There had also been an **increase in geophysical events** like earthquakes and tsunamis that are **not related to climate** but are particularly deadly.
 - **Major floods** had more than doubled to 3,254, there had been 2,034 major storms up from 1,457 in 20 years.
 - **India** is the **2nd most affected country by floods** after China.

Note:



- Extreme heat is proving especially deadly. **Heatwaves of 2015 in India** resulted in 2,248 deaths.
- The **deadliest single disaster** in the past 20 years was the **2004 Indian Ocean tsunami**, with 2,26,400 deaths, followed by the **Haiti earthquake** in 2010, which claimed some 2,22,000 lives.
- The data showed that **Asia** has suffered the **highest number of disasters** in the past 20 years with 3,068 such events, followed by the Americas with 1,756 and Africa with 1,192.
- In terms of affected countries, **China** topped the list with 577 events followed by the **United States** with 467 and **India** (321 events).
- **Concern:**
 - Governments are not doing enough to prevent climate hazards.
 - A **temperature increase of 3°C** of the global climate is estimated to **increase the frequency of potentially high impact natural hazard events** across the world. This could render **current national and local strategies** for disaster risk reduction and climate change adaptation **obsolete** in many countries.
 - **Shifting rainfall patterns and greater variability** in precipitation poses a **risk to the 70% of global agriculture** that is rain-fed and the 1.3 billion people dependent on degrading agricultural land.
- **Recommendations:**
 - The concentrated impact due to a single disaster in some countries provides an opportunity for a more focused approach on disaster risk reduction. However, **Covid-19** demonstrates the need for a systemic, multi hazard approach in an increasingly globalized and interconnected world.
 - There is a requirement for **strengthening disaster risk governance** to manage disaster risk with clear vision, competence, plans, guidelines, funding and coordination across sectors and in a manner, which takes account of the increasingly systemic nature of disaster risk.
 - **Public and private investment** in disaster risk

prevention and reduction through **structural and non-structural measures** needs to be stepped up to create disaster resilient societies.

United Nations Office for Disaster Risk Reduction

- The UNDRR was **established in 1999** as a dedicated secretariat to facilitate the implementation of the **International Strategy for Disaster Reduction (ISDR)**.
- It is headquartered in **Geneva, Switzerland**.
- It is mandated to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities.
- It is an **organisational unit of the UN Secretariat** and is led by the UN Special Representative of the Secretary General for Disaster Risk Reduction (SRSG).
- **UNDRR's Strategic Framework 2016-2021** has a vision to substantially reduce disaster risk and losses for a sustainable future with the **mandate to act as the custodian of the Sendai Framework (India is a signatory)**.

Indian Scenario

- The **National Disaster Management Authority (NDMA)** is the apex statutory body for disaster management in India.
- The NDMA was formally constituted in 2006, in accordance with the **Disaster Management Act, 2005** with the Prime Minister as its Chairperson.
- **National Disaster Management Plan (NDMP)** defines the roles and responsibilities of various stakeholders including Central Ministries/ Departments, State Governments, UT Administrations, District Authorities and local self Governments.
 - Primary responsibility of disaster management rests with the **States**.
 - The **Central Government** conducts regular mock drill, community training and awareness programmes to prepare the civilian populations for disasters.



Note:

History

Highlights

- Lal Bahadur Shastri Jayanti
- Mahatma Gandhi Jayanti
- Dr. Ram Manohar Lohia
- Jayaprakash Narayan and Nanaji Deshmukh Jayanti

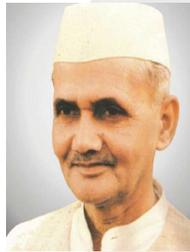
Lal Bahadur Shastri Jayanti

Why in News

2nd October is the birth anniversary of **Lal Bahadur Shastri**. He served as the second Prime Minister of India.

Key Points

- He was born on **2nd October 1904** in **Mughalsarai**, a small railway town seven miles from **Varanasi** in **Uttar Pradesh**.
- He **participated in the freedom movement since 1930**.
- He joined **Kashi Vidyapith** in Varanasi, one of the many national institutions set up in defiance of the British rule.
 - 'Shastri' was the **bachelor's degree** awarded to him by the Vidyapith but has stuck in the minds of the people as part of his name.
- He was a **minister in the Union Cabinet from 1951 to 1956** when he **resigned taking responsibility for the railway accident** and later from 1957-1964.
- He was **India's second Prime Minister (1964-66)**.
 - During Shastri's brief Prime Ministership, the country faced **two major challenges**.
 - India was still recovering from the **economic implications of the war with China (1962)**, **failed monsoons, drought** and serious **food crisis** presented a grave challenge.
 - The country also faced a **war with Pakistan in 1965**.
 - Shastri's famous slogan '**Jai Jawan Jai Kisan**', symbolised the country's resolve to face both these challenges.

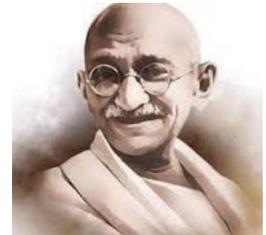


- He signed an **agreement with then Ceylon (now Sri Lanka)** on people of Indian origin there, in **1964**, an **endorsement of the importance of neighbourhood**.
- Shastri's Prime Ministership **came to an abrupt end on 10th January 1966**, when he suddenly expired in **Tashkent**, then in erstwhile USSR and is currently the capital of Uzbekistan.
 - He was there to discuss and sign an agreement (**Tashkent Agreement**) with **Muhammad Ayub Khan**, the then President of Pakistan, to end the war.
- He was the **first person to be posthumously awarded the Bharat Ratna (1966)**.

Mahatma Gandhi Jayanti

Why in News

2nd October 2020 was the **151st birth anniversary** of the Father of the Nation - Mahatma Gandhi. The **Swachh Bharat Diwas, 2020** was celebrated on the occasion of Gandhi Jayanti with the distribution of **Swachh Puraskar** by the **Ministry of Jal Shakti**.



- Gandhi was a **social reformist and leader of Indian Independence Movement** who introduced the idea of **nonviolent resistance called Satyagrah**.

Key Points

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

Note:

- The idea of satyagraha emphasised **the power of truth** and the **need to search for truth**.
- It suggested that if the **cause was true**, if the **struggle was against injustice**, then **physical force was not necessary** to fight the oppressor. Without seeking vengeance or being aggressive, a satyagrahi could win the battle through nonviolence. This could be done by **appealing to the conscience of the oppressor**.
- People – including the oppressors – **had to be persuaded to see the truth**, instead of being forced to accept truth through the use of violence. By this struggle, **truth was bound to ultimately triumph**.
- 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 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 and the Civil Disobedience Movement:** For several years after the Non-cooperation Movement ended, Mahatma Gandhi focused on his social reform work.
 - In 1930, Gandhiji declared that he would lead a march to **break the salt law**.
 - According to this law, the state had a monopoly on the manufacture and sale of salt.
 - The march was over 240 miles, 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**.
 - 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 **Sir 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

Note:

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.
- His **symbol of self-reliance - the spinning wheel** - became a popular symbol of 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 (**Martyrs' Day**).

Dr. Ram Manohar Lohia

Why in News

Recently, the Prime Minister of India has paid tribute to **socialist Dr. Ram Manohar Lohia** on his death anniversary.

Key Points

- **Birth:** 23rd March 1910 in Akbarpur, Uttar Pradesh.
- **Brief Profile:**
 - Indian politician and activist who was a prominent figure in socialist politics and in the movement towards Indian independence.
 - Much of his career was devoted to combating injustice through the development of a distinctly Indian version of socialism.
 - **Socialism** refers to a set of political ideas that emerged as a response to the inequalities present in, and reproduced by, the industrial capitalist economy.



➤ **Lohia's Idea of Socialism:**

- Lohia identified **five kinds of inequalities** that needed to be fought against simultaneously:
 - Inequality between man and woman.
 - Inequality based on skin colour.
 - Caste-based inequality.
 - Colonial rule of some countries over others.
 - Economic inequality.
- For him, struggle against these five inequalities constituted five revolutions. He **added two more revolutions** to this list, which were the **seven revolutions or Sapta Kranti** which for Lohia was the ideal of socialism.
 - Revolution for **civil liberties** against unjust encroachments on private life.
 - Revolution for **non-violence** for renunciation of weapons in favour of Satyagraha.

➤ **Education:**

- **Bachelor's degree (1929)** from the **University of Calcutta** and a **doctorate (1932)** from the **University of Berlin**, where he studied economics and politics.

➤ **Pre-Independence Role:**

- In **1934**, he became **actively involved in the Congress Socialist Party (CSP)**, founded that year as a left-wing group within the Indian National Congress.
- A **vehement opponent of Indian participation on the side of Great Britain in World War II** (1939-45), he was arrested for anti-British remarks in 1939 and again in 1940.
- With the emergence in **1942 of the Quit India movement**, a campaign initiated by Mahatma Gandhi to urge the withdrawal of British authorities from India, Lohia and other CSP leaders (such as **Jaya Prakash Narayan**) mobilised support from the underground. For such resistance activities, he was **jailed again in 1944-46**.

➤ **Post-Independence Role:**

- Lohia and other CSP members **left the Congress in 1948**.
- He **became a member of the Praja Socialist Party** upon its formation in **1952** and served as general secretary for a brief period, but **internal conflicts** led to his **resignation in 1955**.
- He **established a new Socialist Party** (1955), for which he became chairman as well as the **editor of its journal, Mankind**.

Note:

- He advocated for various socio-political reforms in his capacity as party leader, including the **abolition of the caste system, stronger protection of civil liberties**, etc.
- In **1963**, Lohia was **elected to the Lok Sabha**, where he was noted for his sharp criticism of government policies.
- **Important Work:** ‘Wheel of History’, ‘Marx, Gandhi and Socialism’, ‘Guilty Men of India’s Partition’, etc.
- **Death:** 12th October 1967.

Jayaprakash Narayan and Nanaji Deshmukh Jayanti

Why in News

Prime Minister of India bowed to Loknayak Jayaprakash Narayan and Nanaji Deshmukh, on their Jayanti.

Key Points

- **Jayaprakash Narayan (JP):**
 - **Birth:** 11th October, 1902 in Sitabdiara, Bihar.
 - **Influenced By:** Marxist ideas in the USA and **Gandhian ideology**.
 - **Contribution to Freedom Struggle:**
 - In **1929**, he joined the **Indian National Congress**.
 - **Imprisonment:**
 - In **1932** imprisoned for a year for participation in the civil disobedience movement.
 - In **1939** for his opposition to Indian participation in **World War II** on the side of Britain but escaped.
 - He played a key role in the formation of the **Congress Socialist Party (1934)**, a left-wing group within the Congress Party.
 - **Post-Independence Role:**
 - In 1948, he left the Congress Party and initiated an anti-Congress Campaign.
 - In **1952**, he formed the **Praja Socialist Party (PSP)**.
 - In **1954**, he devoted his life **exclusively to the Bhoodan Yajna Movement, of Vinoba Bhave**, which demanded land redistribution to the landless.



- In **1959** he argued for a **“reconstruction of Indian polity”** by means of a four-tier hierarchy of village, district, state, and union councils (**Chaukhamba Raj**).
- **Total Revolution:** Against Indira Gandhi Regime as she was found guilty of violating electoral laws by the Allahabad High Court. He advocated a program of **social transformation** which he termed **‘Sampoorna Kranti’ (total revolution)** in 1974 against corruption in public life.

■ Features:

1. Total Revolution has seven component revolutions, namely- political, social, economic, cultural, ideological or intellectual, educational and spiritual.
2. The objective was to bring in a change in the existing society that is in tune with the ideals of the **Sarvodaya** (Gandhian philosophy- progress for all).

- **Bharat Ratna: Jayaprakash Narayan** was **post-humously conferred** with India’s highest civilian award, the **Bharat Ratna (1999)**, for his **“invaluable contribution to the freedom struggle and upliftment of the poor and downtrodden”**.

➤ Nanaji Deshmukh:

- **Birth:** 11th October 1916 in Maharashtra’s Hingoli district.
- **Influenced by:** **Lokamanya Tilak** and his nationalist ideology.
- Dr. Keshav Baliram Hedgewar, founding Sarsangha-chalak(head) of the Rashtriya Swayamsevak Sangh (RSS).
- He was a leader of Bharatiya Jana Sangh and Rashtriya Swayamsevak Sangh.
- **Participation:** He actively participated in **Acharya Vinoba Bhave’s Bhoodan**.
 - Deshmukh was the **main force behind social activist Jayaprakash Narayan’s agitation for total revolution**.
- **Social Activism:** He was a social reformer with focus on health, education and rural self-reliance.
 - He established **Chitarkoot Gramoday Vishwavidyalaya** in Chitrakoot, India’s **first rural University** and had served as its **Chancellor**.
 - He did great work towards the anti-poverty and minimum needs programme.



Note:

- **Electoral Politics:** He was one of **main architects** of the Janata Party.
 - He **won in the 1977 Lok Sabha election** from Balrampur (UP) Lok Sabha constituency.
 - He was **nominated to Rajya Sabha** in 1999 in recognition of his services to the nation.
- **Death:** 27th February, 2010.
- **Awards:**
 - He was awarded **Padma Vibhushan** in 1999.
 - In 2019, the President of India, conferred the **Bharat Ratna** upon him (posthumously) for his services to the nation.



Note:

Geography

Highlights

- Atal Tunnel
- Hurricane Delta
- Session on Precision Agriculture
- Mount Kilimanjaro

Atal Tunnel

Why in News

Recently, the Indian Prime Minister has inaugurated the **Atal Tunnel in Himachal Pradesh's Rohtang**, which connects **Solang Valley near Manali to Sissu in Lahaul and Spiti district**.

Key Points

- **About:**
 - The **9.02-km tunnel is the longest highway tunnel in the world above the height of 3,000 metres**.
 - It cuts through a mountain west of the Rohtang pass and will **shorten the distance between Solang Valley and Sissu by around 46 km** and will take around 15 minutes to cover. Earlier, it would nearly take 4 hours to travel between the two points.
- **Significance:**
 - **All Year Connectivity:** The Atal tunnel is the first step towards all-year connectivity to Ladakh. It has the potential to link **Ladakh to Manali and Chandigarh throughout the year**, as it would bypass Rohtang Pass, which is covered in snow through the winter months.
 - **Strategic:** The tunnel provides a strategic advantage to the country's armed forces by providing year-long connectivity to border areas. It will save an entire day for troops and supplies as they move towards the forward posts.
 - **Avail Basic Facilities:** The residents of Ladakh who had to face immense hardship to avail even basic facilities like healthcare and food supplies will now be able to reach Manali and connect with the rest of the country using this new tunnel. Essential commodities like petrol and vegetable supplies would also likely be available throughout the year.

- **Boon for Farmers:** The drop in travel time will help many, especially farmers whose precious crops like peas and potatoes will no longer rot in trucks before reaching the market.
- **Boost to Tourism:** Livelihoods in the tourism sector of the residents in Lahaul Valley and Ladakh would get a boost.

Rohtang Pass

- Rohtang Pass (elevation 3,978 m) is located in the state of **Himachal Pradesh**.
- It falls in the **Pir Panjal Range of Himalayas**.

Pass	Link/Features
Banihal Pass	Kashmir Valley with the outer Himalaya and the plains to the south.
Bara-Lacha-La Pass	Lahaul district in Himachal Pradesh with Leh district in Ladakh.
Fotu La Pass	Leh with Kargil of Ladakh
Rohtang Pass	Kullu Valley with the Lahaul and Spiti Valleys of Himachal Pradesh.
Shipki La Pass	Kinnaur district of Himachal Pradesh with Autonomous Region of Tibet, China.
Jelep La Pass	Sikkim with Autonomous Region of Tibet, China.
Nathu La Pass	Sikkim with Autonomous Region of Tibet, China.
Lipu Lekh Pass	Chaudans valley of India with Autonomous Region of Tibet, China. It is located close to the tri junction of Uttarakhand (India), China and Nepal.
Khardung La	Ladakh with Siachen glacier. It is the highest motorable pass in the world.
Bom di La	It is in Arunachal Pradesh

Hurricane Delta

Why in News

Recently, Hurricane Delta has made landfall in **Louisiana (USA)** which is still recovering from the damage caused by a **previous hurricane (Laura)** in August 2020.

Key Points

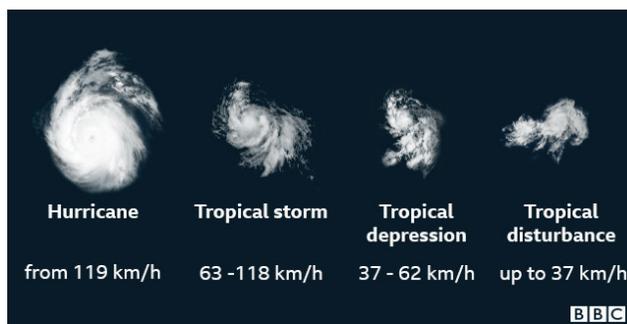
- Hurricane Delta is the **10th named storm** to make landfall in the USA so far this year, breaking a record that has stood since 1916.

Note:

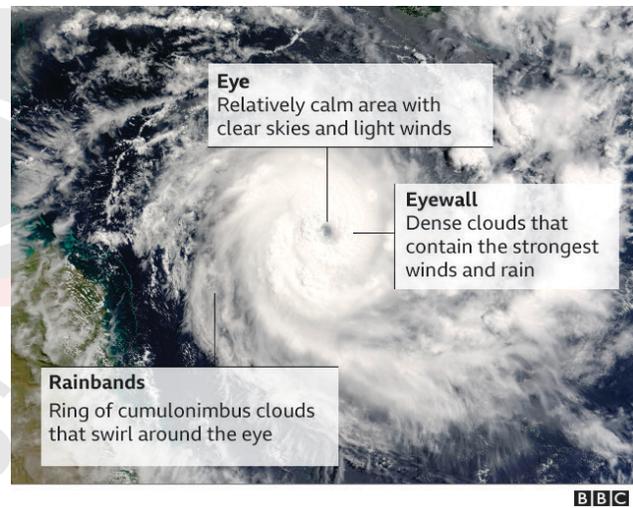
- As per the scientists, **global warming** is a major cause behind rapidly intensifying Atlantic hurricanes.
- Delta is also the **first Greek alphabet named hurricane** on record to make landfall in continental USA.
 - When a very active hurricane season occurs and the list is exhausted, **the Greek alphabets are used** (Alpha, Beta, Gamma, Delta, Epsilon, Zeta, Eta, Theta, etc).
- It hit Louisiana as a **Category 2 hurricane, but weakened to a Category 1** as it moved inland.

Hurricanes

- **About:**
 - Hurricanes are the **biggest and most violent storms** on the planet.
 - **Every year, between June and November** they hit the **Caribbean, the Gulf of Mexico** and the **eastern coast of the USA**, sometimes leaving a trail of destruction in their wake.
- **Various Names:**
 - In the **western North Pacific**, they are called **“typhoons”**.
 - In the **Bay of Bengal and Arabian Sea**, they are called **“cyclones”**.
 - In **Australia**, they are called **“Willy-Willy”**.
- **Formation:**
 - A hurricane **starts out as a tropical disturbance**. This is an area over warm ocean waters where rain clouds are building.
 - A tropical disturbance sometimes **grows into a tropical depression**. This is an area of **rotating thunderstorms** with winds of 62 km/hr or less.
 - A **tropical depression becomes a tropical storm** if its winds reach 63 km/hr.
 - A tropical storm **becomes a hurricane** if its winds reach 119 km/hr.



- **Categories:**
 - Hurricanes can be classified in **five categories** depending on the sustained wind speeds.
 - In the Atlantic, the **Saffir-Simpson wind scale** is used to measure their destructive power.
- **Parts:**
 - **Eye:** The eye is the **“hole”** at the center of the storm. Winds are light in this area. Skies are partly cloudy, and sometimes even clear.
 - **Eye Wall:** The eye wall is a ring of thunderstorms. These storms swirl around the eye. The **wall is where winds are strongest and rain is heaviest**.
 - **Rain Bands:** Bands of clouds and rain go far out from a hurricane's eye wall. These bands stretch for hundreds of miles. They contain thunderstorms and sometimes tornadoes.



- **Naming:**
 - Each year, tropical storms are named in **alphabetical order**. The names come from a list of names for that year. There are **six lists of names**, which are **reused every six years**.

Session on Precision Agriculture

Why in News

Recently, a session on **“Sensors and Sensing for Precision Agriculture”** was organised by the **Indian Council of Agricultural Research-Indian Agricultural Research Institute (ICAR-IARI)**.

Note:

Precision Agriculture

- Precision agriculture (PA) is an **approach where inputs are utilised in precise amounts to get increased average yields**, compared to traditional cultivation techniques such as **agroforestry, intercropping, crop rotation**, etc.
- Sustainable PA is this century's most valuable innovation in farm management that is based on using **Information and Communication Technologies (ICTs)**.
- It is **based on sustainable agriculture and healthy food production** and it consists of profitability and increasing production, economic efficiency and the reduction of side effects on the environment.
- **Benefits:**
 - Increases agriculture productivity.
 - Prevents soil degradation.
 - Reduces chemical application in crop production.
 - Efficient use of water resources.
 - Disseminates modern farm practices to improve the quality, quantity and reduced cost of production.
 - Changes the socio-economic status of farmers.
- **Challenges:**
 - Research suggests **educational and economic challenges** as the two most important in the application of precision agriculture.
 - Among the **variables that contribute to educational challenges**, lack of local experts, funds, knowledgeable research and extension personnel have more of an impact compared to others.
 - PA and initial costs have more of an impact among the **economic challenges** compared to the other issues.

Key Points

- **Discussions at the Session:** Recent **advances in the field of sensors, remote sensing, deep learning, artificial intelligence and Internet of Things (IoT) for monitoring and quantification** of soil, plant and environment to enhance farm productivity with increased input use efficiency and environmental **sustainability**.
- **Part of VAIBHAV Summit:** The session is a part of the **Vaishwik Bhartiya Vaigyanik (VAIBHAV) Summit 2020**.

- VAIBHAV is a **Government of India initiative** to bring together the thought process, practices, research and development (R&D) culture of overseas and Indian scientists/academicians.
- **Research Gaps Identified:**
 - **Development of indigenous low-cost sensors** with integrated platforms, robotics, IoT for high throughput field phenotyping and soil and crop health monitoring and management.
 - **Phenotyping is the process** of determining, analysing or predicting all or part of an organism's phenotype (observable physical properties of an organism).
 - **Big data analytics and modelling** for sensor-based early detection of stresses, discrimination in the agriculture sector.
 - **Standardized protocols for Unmanned Aerial Vehicle (UAV)** based imaging using different sensors, inter sensor calibration and data analytics for near real-time crop condition monitoring and management.
 - **Development of affordable scale neutral precision agricultural technologies** suitable to the ecosystem of Indian agriculture.
 - Scale neutrality means, if other things remain the same, one small plot of land gives the same proportion of output as a large land holding.

Mount Kilimanjaro

Why in News

Recently, a fire has broken out on the slopes of **Mount Kilimanjaro, the highest peak in Africa**.

- The cause of the fire is not clear but **strong winds and dry weather** have caused it to **spread fast**.

Key Points

- Located in **Tanzania**, Mount Kilimanjaro is **Africa's tallest mountain at about 5,895 meters**.
- It is also the **largest free-standing mountain rise in the world**, meaning it is **not part of a mountain range**.
- Kilimanjaro is a **stratovolcano or composite volcano** (a term for a very large volcano made of **layers of ash, lava, and rock**) and is **made up of three cones: Kibo, Mawenzi, and Shira**.

Note:

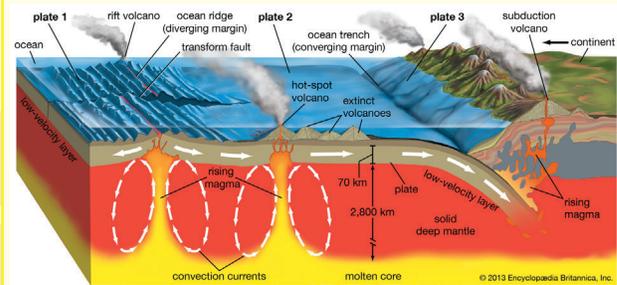


- **Kibo is the summit** of the mountain and the **tallest** of the three volcanic formations. While **Mawenzi and Shira are extinct**, **Kibo is dormant** and could possibly erupt again.
 - Scientists estimate that the **last time it erupted was 3,60,000 years ago**.
- The mountain is also **known for its snow-capped peak** which might disappear within the next 20 years or so as per the warnings by the scientists.
- In **1973**, the mountain and its six surrounding forest corridors were named **Kilimanjaro National Park** in order to protect its unique environment.
 - The park was named a **United Nations Educational,**

Scientific and Cultural Organization (UNESCO) World Heritage site in 1987.

Volcano

- A volcano is an **opening on the surface of a planet which allows material warmer than its surroundings to escape from its interior**.
 - When this material escapes, it causes an **eruption**. An eruption can be **explosive, sending material high** into the sky. Or it can be **calmer, with gentle flows** of material.
- On **Earth**, the erupted material can be **liquid rock** ("lava" when it's on the surface and "**magma**" when it's underground), **ash, cinders, and/or gas**.



Note:

Social Issues

Highlights

- Supreme Court on Right to Protest
- Crime in India 2019 Report: NCRB
- Poverty and Shared Prosperity Report: World Bank
- Kerala and Digital Education
- Section 29 of the POCSO Act
- South Asia Economic Focus Report: World Bank
- Thalassemia Bal Sewa Yojna
- World Mental Health Day 2020
- International Day of Older Persons

Supreme Court on Right to Protest

Why in News

Recently, the **Supreme Court** (SC) has upheld the right to peaceful protest against the law but also cleared that public ways and public spaces cannot be occupied and that too indefinitely.

Key Points

➤ Background:

- The ruling came after a **petition was filed in the SC** highlighting problems caused by the protests which led to the roadblock and traffic problems.
 - Sit-in protests against the **Citizenship (Amendment) Act (CAA), 2019** were organised in the **Shaheen Bagh area of the capital from December 2019 to March 2020**.
- The petition highlighted that the Delhi High Court (HC) should have intervened positively and not left the situation fluid and the administration too should have talked to the protesters.
 - Earlier, the petition was filed in **Delhi HC**, which **heard and disposed of the plea the same day without any specific direction**.
 - Despite a lapse of a considerable period of time, there was **neither any negotiations nor any action by the administration**.

➤ Issues with the Protest and its Location:

- Protesters **did not fully realise the ramifications of the Covid-19 pandemic** and **continued large gatherings in a small place** and there was also a general **unwillingness to relocate** to another site.

- The protest seemed typical of the many **digitally-fuelled “leaderless” dissent** seen in modern times.
- The presence of various groups of protesters had resulted in **many influencers, acting possibly at cross-purposes with each other**.

➤ Rulings:

○ On Assembly:

- The **court cannot accept the plea of the applicants** (who sought to intervene in the matter in defence of the protesters) that an **indeterminable number of people can assemble whenever they choose to protest**.

○ On Role of Administration:

- Such kind of occupation of public ways, whether at the site in question or anywhere else for protests, is **not acceptable and the administration should take action to keep the areas clear** of encroachments or obstructions.
- It highlighted that the State or UT administrations have the **entire responsibility to prevent encroachments** in public spaces and **should not wait for courts** to pass suitable orders.

○ Reference:

- SC referred to its **2018 judgment** in the **Mazdoor Kisan Shakti Sangathan vs Union of India and Another case**, which dealt with demonstrations at Delhi’s Jantar Mantar.
- The judgment **tried to balance the interests of local residents with those of protesters** to hold demonstrations and directed the police to devise a proper mechanism for limited use of the area for peaceful protests and demonstrations and to lay down parameters for this.

Note:



- **On technology Involvement:**
 - The verdict also dwelt on the merits and demerits of technology impacting social movements.
 - The ability to scale up quickly, using digital infrastructure, has empowered movements to embrace their often-leaderless aspirations and evade usual restrictions of censorship.
 - However, social media channels pose the danger of creating highly polarised environments, which often see parallel conversations running with no constructive outcome evident.

➤ **SC's Observations on Dissent:**

- SC appreciated the existence of the right to peaceful protest against the legislation and held that "democracy and dissent go hand in hand, but then the demonstrations expressing dissent have to be in designated places alone".
- The seeds of protest and dissent were sown deep during the Freedom struggle but dissent against the colonial rule cannot be equated with dissent in a self-ruled democracy.
- The Constitution guarantees the right to protest and express dissent, but with an obligation towards certain duties.
 - **Article 19** confers upon citizens the right to freedom of speech and expression under **Article 19(1)(a)** and right to assemble peacefully without arms under **Article 19(1)(b)**.
 - These rights, in cohesion, enable every citizen to assemble peacefully and protest against action or inaction of the State.
- In a democracy, the rights of free speech and peaceful protest are "treasured" and must be encouraged and respected.
 - However, these rights are also subject to reasonable restrictions mentioned under **Article 19(2)**, imposed in the interest of sovereignty, integrity and public order with the help of police regulations.
- **Fundamental rights do not live in isolation.** The right of the protester has to be balanced with the right of the commuter and has to co-exist in mutual respect.

Crime in India 2019 Report: NCRB

Why in News

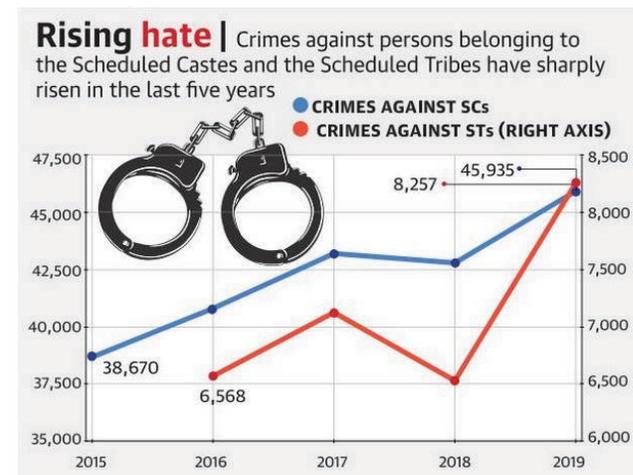
The National Crime Records Bureau (NCRB) has released the annual **Crime in India 2019 report**.

- It reports an increase in crimes against Scheduled Castes (SCs) and Scheduled Tribes (STs) in the year 2019 as compared to the year 2018.

Key Points

➤ **Crimes against SCs and STs:**

- Crime against SCs have increased by over 7% and crimes against STs have increased by 26% in year 2019 compared to 2018.
- **Uttar Pradesh** recorded the highest number of crimes against SCs in 2019, followed by Rajasthan and Bihar.
- **Madhya Pradesh** recorded the highest number of cases against STs, followed by Rajasthan, and Odisha.
- **Categories:** Crimes against SCs and STs include the following categories:
 - Atrocities committed by non-SC/ST members under the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities Act), 1989** (POA Act)
 - Indian Penal Code.
 - **Protection of Civil Rights Act, 1955:** It prescribes punishment for the preaching and practice of Untouchability.



Note:

- **Lack of Data**
 - According to the **Commonwealth Human Rights Initiative** (CHRI), very few cases were being registered for specific discriminatory action against SCs and STs under the POA Act.
 - Such actions are registered mainly when **accompanied by any of the IPC offences** like rape, murders etc.
 - Also, there is **no data on total complaints** received on crimes against the Scheduled Castes, the only data available is the number of cases registered.
- **Data on Other Crimes:**
 - **Cognizable Crimes:** An increase of 1.6% in registration of cognizable crimes in 2019 as compared to 2018 was recorded.
 - Cognisable offence means an offence in which a police officer has the authority to make an arrest without a warrant.
 - Cognizable crimes comprise crimes under **Indian Penal Code (IPC)** and **Special and Local Laws (SLL)**.
 - SLL are Acts that are framed by the **state government** for specific issues.
 - **Crimes Against Women:** Crime against women showed an **increase of 7.3%** in 2019 from 2018.
 - 88 cases of crimes against women were recorded per day.
 - Majority of cases under crime against women under IPC were registered under cruelty by husband or his relatives (30.9%), followed by assault on women with intent to outrage her modesty, kidnapping & abduction of women and rape.
 - In the number of cases of **rape of women belonging to SCs**, **Rajasthan** topped the list, followed by Uttar Pradesh and Madhya Pradesh.
 - **Cybercrimes:** Increased by 63.5% in 2019.
 - 60.4% of cybercrime cases registered were for the motive of fraud followed by sexual exploitation.
- **Other Related News:** The Supreme Court recently **upheld the constitutional validity of the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2018**.
 - The amendment act was challenged on the grounds of violation of the **fundamental right to equality (Article 14)** and **personal liberty (Article 21)**.

- The amendment act adds article 18A which states that the preliminary enquiry shall not be required for registration of a First Information Report against any person.
- It also delineates **specific crimes** against Scheduled Castes and Scheduled Tribes as atrocities and **describes strategies and prescribes punishments** to counter these acts.

National Crime Record Bureau

- NCRB, **headquartered in New Delhi**, was set-up in **1986** under the **Ministry of Home Affairs** to function as a repository of information on crime and criminals so as to assist the investigators in linking crime to the perpetrators.
- It was set up based on the recommendations of the National Police Commission (1977-1981) and the MHA's Task Force (1985).
- NCRB brings out the annual comprehensive statistics of crime across the country (**'Crime in India' report**).
- Being **published since 1953**, the report serves as a crucial tool in understanding the law and order situation across the country.

Poverty and Shared Prosperity Report: World Bank

Why in News

The **World Bank** in its **biennial Poverty and Shared Prosperity Report** mentions that **Covid-19** can add around 27-40 million new poor in Sub-Saharan Africa and around 49-57 million in South Asia region.

- The **"new poor" will:**
 - Be more urban poor.
 - Be more engaged in informal services and manufacturing and less in agriculture.
 - Live in congested urban settings and work in the sectors most affected by lockdowns and mobility restrictions.

Key Points

- **Extreme Poverty Projection:** The **Covid-19 pandemic** is estimated to push an additional 88 million to 115 million people into extreme poverty this year, with the total rising to as many as 150 million by 2021, depending on the severity of the economic contraction.

Note:

- **Percentage of Population:** The pandemic and global recession may cause over 1.4% of the world's population to fall into extreme poverty.
- **Extreme Poverty:** It is defined as living on less than USD 1.90 a day. The World Bank measures poverty lines of USD 3.20 and USD 5.50, and also a multidimensional spectrum that includes access to education and basic infrastructure.
- **Increase in Rate of Poverty:** Global extreme poverty rate is projected to rise by around 1.3 % to 9.2 % in 2020. If the pandemic would not have been there, the poverty rate was expected to drop to 7.9 % in 2020.
- **Regions of Incidence:** Many of the newly poor individuals will be from countries that already have high poverty rates (Sub-Saharan Africa and South Asia).
 - Around 82% of the total poor will be in middle-income countries (MICs).
 - **Flood Prone Areas:** About 132 million of the global poor live in high flood risk regions. The focus on flooding in this report primarily reflects the fact that floods are one of the most common and severe hazards, especially in lower-income countries.
- **Reverse of Progress Made:** Current increasing poverty is the reversal of the achievements made in two-and-a-half decades (1990-2015).
 - Extreme poverty rate declined by 26%. It dropped to 10% from nearly 36%.
 - During 2012-2017, the growth was inclusive and the incomes of the poorest 40% of the population grew.
 - The average global shared prosperity was 2.3% during the period.
- **Diminished Shared Prosperity:** Average global shared prosperity is estimated to stagnate or even contract over 2019-2021 due to the reduced growth in average incomes.
 - Shared prosperity is defined as the **growth in the income of the poorest 40% of a country's population.**
- **Reason:** Global extreme poverty is expected to rise for the first time in 20 years because of the disruption caused by Covid-19.
 - It is exacerbating the impact of conflict and **climate change**, which were already slowing down poverty reduction.

➤ **Proposed Strategy:**

- The **World Bank** recommends for a complementary **two-track approach** which involves short as well as long term strategy:
 - **Short-run:**
 - Without policy actions, the Covid-19 crisis may lead to an increase in income inequality, resulting in a world that is less inclusive.
 - Countries need to prepare for a different economy post-Covid, by allowing capital, labour, skills, and innovation to move into new businesses and sectors.
 - **Long-run:**
 - Continuing to focus on foundational development problems, including conflict and climate change as the key areas.

Poverty in India

- **Poverty estimation** in India is carried out by **NITI Aayog's** task force through the calculation of poverty line based on the data captured by the **National Sample Survey Office** under the Ministry of Statistics and Programme Implementation (MOSPI).
 - Poverty line estimation in India is **based on the consumption expenditure and not on the income levels.**
- **Global Multidimensional Poverty Index 2020:**
 - India lifted as many as 270 million people out of **multidimensional poverty** between 2005-06 and 2015-16.
 - **Impact of Covid-19:** Covid-19 is having a profound impact on the development landscape.
 - The study finds that on average, poverty levels will be set back 3 to 10 years due to Covid-19.
 - **Sustainable Development Goals:** The index emphasises on measuring and monitoring progress under the goals to reach '**Zero Poverty by 2030 SDG 1**' of the **SDGs**.
- **Recent Measures Taken:**
 - The government enhanced its social safety programs including direct benefit transfers such as cash transfers under **PM Kisan scheme**, more liberal financing under the **Mahatma Gandhi National Rural Employment Guarantee Act, 2005** like advance disbursement, direct cash grants to construction workers and release of free and subsidized food

Note:



grains under **Pradhan Mantri Garib Kalyan Yojana** to about 800 million people to ensure food for all.

- The Government announced a special economic package of Rs. 20 lakh crore (equivalent to 10% of India's GDP) under **Atmanirbhar Bharat Scheme** with the aim of making the country independent against the tough competition in the global supply chain and to help in empowering the poor, labourers, migrants who have been adversely affected by Covid-19.

Kerala and Digital Education

Why in News

Recently, Kerala has become the first state in the country to have **high-tech classrooms or high-tech labs in all government-run and aided schools.**

Key Points

- As part of the **High-tech Classroom Project**, a flagship project of the government, **high-tech labs** have been set up in **primary and upper primary schools** and 40,000 classrooms in **high school and higher secondary schools** have been converted into **smart classrooms.**
- **High-speed broadband internet** has been ensured in 12,678 schools.
- The **Project** was implemented by **Kerala Infrastructure and Technology for Education (KITE)**, the nodal agency for **Information and Communication Technology (ICT)** education in schools.
- The Kerala government has also started **digital classrooms known as 'First bell'** to impart education to 41 lakh students in the state after schools shut due to the lockdown.
- The state government is also carrying out a unique programme called "**Namath Basai**" of **teaching tribal children in their mother tongue.**
 - The programme is being implemented by the **Samagra Shiksha Kerala (SSK).**
- The Central government has also proposed **long-term measures** to address social inequities in online education, as highlighted by the **Covid-19 pandemic.**
- However, **digital education in India** still faces many challenges like lack of internet penetration, economic inequality, lack of trained teachers, etc.

Section 29 of the POCSO Act

Why in News

Recently, the **Delhi High Court** has ruled that the **presumption of guilt engrafted in Section 29 of the Protection of Children from Sexual Offences (POCSO) Act, 2012 gets triggered and applies only once the trial begins**, that is after charges are framed against the accused.

Key Points

- **Section 29 of the POCSO Act:**
 - It says that when a person is prosecuted for committing an offence of sexual assault against a minor, the special court trying the case "**shall presume**" the accused to be guilty.
- **Background:**
 - The question of whether the presumption of guilt applies only at the stage of trial or does it also apply when a bail plea is being considered cropped up while hearing the bail plea of a 24-year-old man arrested for alleged sexual assault of a minor.
- **Rulings:**
 - It was clarified that **if a bail plea is being considered before charges** have been framed, **Section 29 has no application.**
 - 'Trial' commences when charges are framed against an accused and not before that.
 - **Only at the stage when charges are framed does the court apply its judicial mind** to whether there is enough evidence on record **to frame a precise allegation**, which the accused must answer.
 - The Court held that an **accused cannot be asked to disprove their guilt even before the foundational allegations** with supporting evidence that suggests guilt are placed by the prosecution before the court.
 - It is **only once charges are framed** that the accused know exactly what they are alleged to be guilty of; and therefore, what **guilt they are required to rebut** (deny).
 - It would be **disgraceful to fundamental criminal jurisprudence to ask the accused to disclose their defence**; or, worse still, to present evidence in their defence **even before the prosecution has marshalled its evidence.**

Note:

Key factors

Real-life considerations for court while deciding bail

Age of the minor victim: The younger the victim, the more heinous the offence alleged

Age of the accused: The older the accused, the more heinous the offence alleged

Comparative age of victim and accused: The more their age difference, the more the element of perversion in the offence alleged



Familial relationship: The closer such relationship, the more odious the offence alleged

WHAT DOES SECTION 29 OF THE POCSO ACT SAY

When a person is prosecuted for committing an offence of sexual assault against a minor, the special court trying the case "shall presume" the accused to be guilty

- Earlier, the **reverse burden on the accused to prove his innocence** was incorporated in the **POCSO Act** keeping in view the low conviction rate of sexual offences against children.
 - **Reverse burden** means that persons charged with an offence would have to rebut the presumption against them and the burden of proof would lie on them to show that they have not committed the act constituting an offence.
- The Court also set out **fresh norms while deciding a bail plea at the post-charge stage**. It held that in addition to the nature and quality of the evidence before it, the court would **also factor in certain real-life considerations**.
 - These include whether the offence alleged **involved threat, intimidation, violence or brutality**. Also, the court, hearing the bail would consider whether the **offence was repeated against** the victim.

Protection of Children from Sexual Offences Act, 2012

- It was enacted to **protect the children from offences of sexual assault, sexual harassment and pornography** with due regard for safeguarding the interest and well-being of children.
- It **defines a child as any person below eighteen years of age** and regards the best interests and welfare of the child as a matter of paramount importance at every stage, to ensure the healthy physical, emotional, intellectual and social development of the child.

- It **defines different forms of sexual abuse**, including penetrative and non-penetrative assault, as well as sexual harassment and pornography.
- It deems a **sexual assault to be "aggravated" under certain circumstances**, such as when the abused child is mentally ill or when the abuse is committed by a person in a position of trust or authority like a family member, police officer, teacher, or doctor.
- It also **casts the police in the role of child protectors** during the investigative process.
- The Act stipulates that a **case of child sexual abuse must be disposed of within one year** from the date the offence is reported.
- It was **amended in August 2019** to provide **more stringent punishment**, including the death penalty, for sexual crimes against children.

South Asia Economic Focus Report: World Bank

Why in News

The **World Bank** has recently released its biennial **South Asia Economic Focus report**. The fall 2020 edition is titled "Beaten or Broken? Informality and Covid-19".

- The report includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
- The report predicts that the extended closure of schools amid the **Covid-19 pandemic** could **dent India's future earnings** by anywhere between 420 billion USD and 600 billion USD, as depleted learning levels of students will translate into **poorer productivity** going forward.

Key Points

- **Impact on Education:**
 - Around **5.5 million students could drop out of schools** across South Asia.
 - **391 million students** have been kept out of school in primary and secondary education due to **lockdown**.
 - Dropouts, combined with substantial learning losses for those who remain enrolled in schools, would **cost South Asia as much as 622 billion USD** in future earnings and gross domestic product.
 - The regional loss is **largely driven by India**, all countries will lose substantial shares of their GDP.

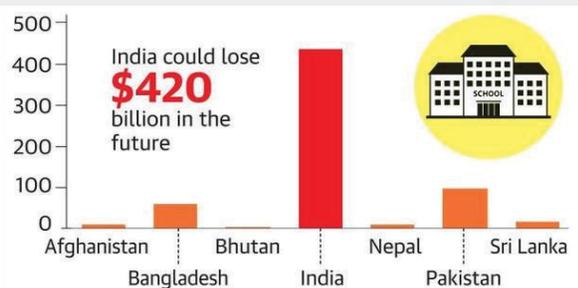
Note:



- The projected learning loss for the region is **0.5 years of learning-adjusted years of schooling (LAYS)** at present.
 - LAYS combines quantity and quality of schooling into a single easy-to-understand metric of progress.
- Due to the closure of schools, not only the learning process has been obstructed but the children may have **forgotten their previous learnings**.
 - The average child in South Asia may lose 4,400 USD in lifetime earnings once having entered the labour market, equivalent to **5% of total earnings**.
- Engaging children through remote learning programmes had been difficult, despite most governments' best efforts to mitigate the impact of school closures.

Closure effect

Among South Asian nations, India's future earnings are projected to be impacted the most due to school closures. The chart shows the amounts (in USD billion) some countries are projected to lose due to school closures



Impacts on Economy:

- **Impact on Informal Sector:** The report has flagged damage to businesses, consumption patterns and imposed social hardship on poor and vulnerable households, especially **urban migrants** and informal workers in the South Asia region. It has also warned against **far-reaching consequences** apart from these immediate impacts.
- **GDP:** The regional GDP of the South Asia region is estimated to contract by 7.7% in 2020.
 - **India's Gross Domestic Product (GDP)** can contract by 9.6% in 2020-21.
- **Labour productivity:** It will also take a greater hit from Covid-19 than most previous natural disasters. **Reasons** for the decrease in labour productivity are as follows:

- **Globalization:** The increased integration of the global economy will amplify the adverse impact of Covid-19. Effect on supply chains, export-import and international migration of labour will affect labour productivity.
- **Capacity underutilization:** Contagion prevention and physical distancing may render some activities, for example, the hospitality sector, unviable unless they are radically transformed, which will take time. Even in less directly affected sectors such as manufacturing, banking and business, severe capacity underutilisation lowers total factor productivity.
- **Disruptions to training, schooling and other education:** These may occur due to severe income losses as well as lack of access to training and education facilities. Even once restrictions are lifted, the impediment of training will also lower human capital and labour productivity over the long term.

Other Related Reports:

- Recently, the **UN Report on the Impact of Covid-19 on Children** estimated that almost **24 million children could drop out** or not have access to school next year due to the **economic impact of Covid-19**.
- Earlier this year, **the Global Education Monitoring Report, 2020** was released by UNESCO which highlighted that the **Covid-19 had worsened the inequalities in education systems** worldwide.

Thalassemia Bal Sewa Yojna

Why in News

The Ministry of Health and Family Welfare launched the second phase of "Thalassemia Bal Sewa Yojna" for the underprivileged Thalassemic patients.

Key Points

- The **Hematopoietic Stem Cell Transplantation (HSCT)** program was launched in **2017** and is funded by **Coal India Corporate Social Responsibility (CSR)**. It will be **extended** for next two years from 2020.
- **HSCT** refers to the **transplantation of stem cells** from various sources (bone marrow, growth factor-stimulated peripheral blood, and umbilical cord blood) for the treatment of various diseases like autoimmune, and genetic diseases.

Note:

- **Hematopoietic Stem Cell:** It is an immature cell that can develop into all types of blood cells, including white blood cells, red blood cells, and platelets. Hematopoietic stem cells are found in the peripheral blood and the bone marrow. Also called blood stem cell.
- **Objective:** It aims to provide a **one-time cure opportunity for Haemoglobinopathies like Thalassaemia and Sickle Cell Disease** for patients who have a matched family donor.
- **Eligibility:** Only patients whose **monthly family income is below Rs. 20,000** will be eligible for this assistance.
- The scheme has been extended to cover **Aplastic Anaemia patients** (lack of blood cell production in body).
- **Funding:** The CSR initiative is targeted to provide financial assistance to a total of 200 patients by providing a package cost not exceeding **Rs. 10 lakhs per HSCT**.
- **Statistics:** It is estimated 10,000 to 12,000 children are born with thalassemia every year in India.
 - Data on the prevalence of **silent carriers** (persons without symptoms but potential to transmit to offsprings) for various Haemoglobinopathies show that silent carriers are **2.9-4.6% for Thalassaemia**, while it can be as high as **40% for sickle cell anaemia** especially among the tribal population.
 - Haemoglobin variants like **Hemoglobin E (HBE)** - deformed hemoglobin- in **eastern India** can be as common as **3-50%** which calls for more attention to these diseases.

Thalassaemia

- It is a **genetic blood disorder** that causes the body to have less hemoglobin than normal. Hemoglobin enables red blood cells to carry oxygen. Thalassaemia can cause anemia, leading to fatigue.

Sickle Cell Disease

- It is an inherited disease caused by defects, called mutations, in the beta globin gene that helps make hemoglobin. The red blood cells become hard and sticky and look like a C-shaped farm tool called a "sickle". The **sickle cells die early**, which causes a **constant shortage of red blood cells**.
- **World Sickle Cell Day 2020** was observed to increase awareness about the Sickle Cell Disease (SCD) at the national level.
 - The day is recognised by the **United Nations** and celebrated every year on **19th June**.

World Mental Health Day 2020

Why in News

Every year, the World Mental Health Day is observed on **10th October** to raise awareness about mental health issues around the world and to mobilise efforts in support of mental health.

Key Points

- **Theme for 2020:** Mental Health for All, Greater Investment-Greater Access.
- **The Big Event for Mental Health:** It is the first-ever global online advocacy event on mental health, hosted by the **World Health Organisation (WHO)** on the day.
- **Impact of Covid-19 on Mental Health:**
 - Surveys have indicated that the pandemic is increasing mental health problems.
 - Half the respondents from seven countries in a survey by the **non-profit International Society for the Red Cross and Red Crescent Movement** have reported negative effects on mental health.
 - **Vulnerability:** People in **younger age, female gender and those with comorbidities** reported more psychological impact.
 - **Pandemic Induced Causes:**
 - The pandemic has **increased isolation and loss of income** which are well-known triggers of mental health conditions.
 - The disease itself has been reported to **lead to neurological and mental complications** such as **delirium, agitation and stroke**.
 - The **Covid-19** has disrupted or halted mental health services in 93% of the countries.
 - **Funding and Aid Related Causes:**
 - **Lack of funding for mental health issues is a huge challenge** posed by the pandemic.
 - WHO pointed out that **countries are spending less than 2%** of their health budget on mental health.
 - **Only around 1% of the international aid** available for health is earmarked for mental health.
- **Data Analysis:**
 - **Practo**, an **integrated health care company**, reported a **665% jump in the number of mental health consultations**.

Note:



- More than two-thirds of the queries were from those aged 21-40.
- **Anxiety, stress and panic attacks** were the most commonly discussed topics.
- In the USA, more than 90% of respondents to a survey of Harvard Medical School reported **increased worry, frustration, boredom or anxiety**.
- The **global economic cost of mental illness** is expected to be **more than USD 16 trillion over the next 20 years**, which is more than the cost of any other non-communicable disease.
- **Indian Scenario:**
 - A report published in **The Lancet Psychiatry** in February 2020 indicates that in 2017, there were 197.3 million people with mental disorders in India.
 - The top mental illnesses were **depressive disorder** (45.7 million) and **anxiety disorder** (44.9 million).
 - The contribution of mental disorders to the total **disability-adjusted life years (DALYs)** in India increased from 2.5% in 1990 to 4.7% in 2017.
 - **Disability-Adjusted Life Years:** The burden of disability associated with a disease or disorder can be measured in units called DALYs.
 - They represent the total number of years lost to illness, disability, or premature death within a given population.
 - **Budgetary Spending:** The year 2020 began with a **reduction of budget allocation for mental health in India**.
 - India's healthcare budget in 2018 was Rs. 52,800 crore, of which Rs. 50 crore was for mental health, which was further reduced to Rs. 40 crore in 2019.
 - India is **barely spending 0.5%** of the health budget in this sector.
 - **Initiatives:**
 - The **Mental Health Care Act (MHCA), 2017** came into force in 2018 to meet the requirements of the **United Nations Convention on the Rights of Persons with Disabilities** which India ratified in 2007.
 - **KIRAN:** The **Ministry of Social Justice and Empowerment** has launched a **24/7 toll-free helpline** to provide support to people **facing anxiety, stress, depression, suicidal thoughts and other** mental health concerns.

- **Manodarpan Initiative:** It is an **initiative** of the **Ministry of Education** under **Atmanirbhar Bharat Abhiyan**, which aims to provide psychosocial support to students, family members and teachers for their mental health and well-being during the times of Covid-19.

Mental Health Care Act, 2017

- **Right to make an Advance Directive**, wherein patients can state on how to be treated or not be treated for the illness during a mental health situation.
- **Right to Appoint a Nominated Representative:** A person shall have the right to appoint a nominated representative to take on his/her behalf, **all health-related decisions like:**
 - Right to access mental health care.
 - Right to free and quality services.
 - Right to get free medicines.
 - Right to community living.
 - Right to protection from cruel, inhuman and degrading treatment.
 - Right to live in a safe and hygienic environment, having basic amenities,
 - Right to legal aid.
 - No **Electroconvulsive Therapy (ECT)** without anaesthesia.
- This act brought **changes in Section 309 of the Indian Penal Code** (which criminalised attempted suicide). The attempt to commit suicide is punishable only as an exception.

International Day of Older Persons

Why in News

The **International Day of Older Persons (IDOP)** is observed on **1st October** (designated in 1990 by the **United Nations General Assembly**) every year.

Key Points

- The **2020 theme** aims to:
 - Promote Decade of Healthy Ageing (2020-2030).
 - The Decade of Healthy Ageing has been endorsed by the 73rd World Health Assembly (decision making body of the World Health Organisation) in 2020.

Note:

- It is an opportunity to bring together governments, civil society, international agencies, professionals, the media, and the private sector for ten years of concerted, catalytic and collaborative action to improve the lives of older people, their families, and the communities in which they live.
- Healthy Ageing is the process of developing and maintaining the functional ability that enables wellbeing in older age. Functional ability is about having the capabilities that enable all people to be and do what they have reason to value.
- Reduce the health disparities between older persons in the developed and developing countries, so as to “Leave no one behind”.
- Appreciate the role of the health care workforce in maintaining and improving the health of older persons, with special attention to the nursing profession.
 - The year 2020 has also been recognised as the “**Year of the Nurse and Midwife**”.
- Increase understanding of the impact of **Covid-19** on older persons.
- **Related Data:**
 - By 2020, the number of people aged 60 years and older will outnumber children younger than 5 years.
 - Over the next three decades, the number of older persons worldwide is projected to more than double, reaching more than 1.5 billion persons in 2050, and 80% of them will be living in low- and middle-income countries.
 - The Covid-19 pandemic may significantly lower older persons’ incomes and living standards. Already, less than 20% of older persons of retirement age receive a pension.
- **India Specific Data:**
 - As per Census 2011, the total population of Senior Citizens (people aged 60 years and above) is 10.38 crore, of which the population of males and females are 5.11 crore and 5.27 crore respectively.
 - The share of senior citizens in the total population as per Census 2011 is 8.57%. As per the May 2006 Report of the “Technical Group on Population Projections” constituted by the National Commission on Population published by the Office of the Registrar General of India this share is expected to increase to 10.70% in 2021 and to 12.40% in 2026.
- **Initiatives Taken by India:**
 - The Ministry of Social Justice and Empowerment is the Nodal Ministry for matters relating to the **Senior Citizens**.
 - Article 41 of the Constitution states that the State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, and in other cases of undeserved want.
 - **Integrated Programme for Older Persons:** It is a **central sector scheme**. Financial assistance is provided to Government/Non-Governmental Organizations/Panchayati Raj Institutions/local bodies etc. for running and maintenance of various projects for the welfare of indigent Senior Citizens.
 - **Pradhan Mantri Vaya Vandana Yojana:** It is a **pension scheme** for senior citizens that comes with guaranteed returns on monthly, quarterly, half-yearly or on an annual basis for a period of 10 years. It is exclusively available to those who are 60 years of age and above.
 - **Maintenance and Welfare of Parents and Senior Citizens (MWPCS) Act, 2007:** To ensure need-based maintenance for Parents and Senior Citizens and their welfare.
 - **Vayoshreshtha Samman:** Conferred as a National award (part of celebrations of International Day of Older Persons), and given to eminent senior citizens & institutions in recognition of their services towards the cause of the elderly persons.



Note:



Security

Highlights

- *BrahMos Testing*
- *Exercise Bongosagar*
- *Shourya Missile*
- *SMART System: DRDO*

BrahMos Testing

Why in News

BrahMos Land-Attack Cruise Missile (surface-to-surface) was successfully flight tested from the Integrated Test Range at **Balasore** in **Odisha**.

Key Points

- It is a **joint venture** between the **Defence Research and Development Organisation of India (DRDO)** and the **NPOM of Russia**.
 - Brahmos is named on the **rivers Brahmaputra (India) and Moskva (Russia)**.
- It is a **supersonic** missile travelling at a speed of **Mach 2.8** (nearly three times the speed of sound)
 - It is the world's **fastest supersonic cruise missile**.
- It is a **multiplatform** i.e. it can be launched from **land, air, and sea** and multi capability missile with pinpoint accuracy that works in **both day and night** irrespective of the weather conditions.
 - It is, therefore, used by all three forces, the **Army, Navy and the Air Force**.
- It operates on the **"Fire and Forget"** principle i.e it does not require further guidance after launch.
- It is the **heaviest weapon** to be deployed on **Sukhoi-30 MKI fighter aircraft**, with a weight of 2.5 tonnes.
- Its **range has been recently enhanced** from 300 Km to 450-600 Km.
 - Increasing the missile's range became possible after India's induction into the **Missile Technology Control Regime (MTCR)** in June 2016.



- The missile features **indigenous Booster and Airframe Section**, along with many other **indigenous sub-systems**.
- **Advantages:**
 - BrahMos has been deployed in **Ladakh** as well as the **Eastern Sector in Arunachal Pradesh** to tackle any threats in the **ongoing standoff with China**.
 - Enhanced use of indigenous technologies will give a boost to India's **AtmaNirbhar Bharat** and **Make in India** Initiatives.
 - Increasing indigenous content in defence systems has also been a prime focus of **Defence Acquisition Procedure, 2020** and **draft Defence Production and Export Promotion Policy 2020**.
- **Others:**
 - India is also working on a hypersonic missile, **BrahMos-II (K)**, capable of taking out hardened targets such as underground bunkers and weapon storage facilities at seven times the speed of sound (Mach 7).

Exercise Bongosagar

Why in News

The second edition of **Exercise Bongosagar**, **bilateral naval exercise between India and Bangladesh**, is scheduled to commence in Northern Bay of Bengal on 3rd October 2020.

Key Points

- Its **first edition** was held in **2019**.
- **Aim:** To develop interoperability and joint operational skills through the conduct of a wide spectrum of maritime exercises and operations.
- It will be followed by the **3rd edition of India-Bangladesh Coordinated Patrol (IN-BN CORPAT)**, wherein both

Note:

countries will undertake joint patrolling along the **International Maritime Boundary Line (IMBL)**.

- CORPATs have **strengthened understanding between both the navies** and instituted measures to stop the conduct of unlawful activities.

➤ **Significance:**

- The exercise reflects the priority that Indian Navy accords to the Bangladesh Navy as part of the **SAGAR (Security And Growth for All in the Region) Vision**.
- It is being conducted during **Mujib Barsho**, the **100th birth anniversary of Bangabandhu Sheikh Mujibur Rahman**.

Shourya Missile

Why in News

Recently, a successful trial of the nuclear-capable **Shourya missile** was conducted by India.

Key Points

➤ **Shourya Missile:**

- Shourya is a **land variant of short-range Submarine Launched Ballistic Missile (SLBM) K-15 Sagatika**, which has a range of at least 750 kilometers.
- It is capable of carrying payloads of 200 kg to 1000 kg.
- It is a **surface-to-surface** tactical missile.
- These **ballistic missiles** belong to the **K missile family - codenamed** after late Dr. APJ Abdul Kalam - which are launched from **Arihant class** of nuclear submarines.
- Shourya, like many of the modern missiles, is a **canister-based system**, which means that it is **stored and operated from specially designed compartments**.
- The missile is **less vulnerable to anti-ballistic missile defence systems** due to its high **maneuverability**.

➤ **The K Family of Missiles:**

- The K family of missiles are **primarily Submarine Launched Ballistic Missiles (SLBMs)**.
- These have been **indigenously developed** by **Defence Research and Development Organisation (DRDO)**.
- The development of these missiles **began in the late 1990s** as a step towards completing India's **nuclear triad**.

- Nuclear triad is the capability of launching nuclear weapons from land, sea and air-based assets.

- Because these missiles are to be launched from submarines, they are **lighter, smaller and stealthier** than their land-based counterparts - the **Agni series** of missiles which are medium and intercontinental range nuclear capable ballistic missiles.
- India has also developed and successfully tested multiple times the **K-4 missiles** from the family which has a range of 3500 km.
- The early development trials of K-15 and K-4 missiles had begun in the early 2010s.
- K-5 and K-6 with ranges of 5000 and 6000 km are also under development.

➤ **Strategic Importance of SLBMs:**

- **Nuclear Deterrence:** The capability of SLBMs has great strategic importance in the context of achieving a **nuclear triad**, especially in the light of the **'no first use' policy of India** which acts as a **deterrent**.
- These submarines can not only survive a first strike by the adversary but also can launch a strike in retaliation thus achieving **Credible Nuclear Deterrence**.
- The development of these capabilities is **important in light of India's relations with the two neighbours China and Pakistan**.

Ballistic Missile

- It is a **rocket-propelled self-guided** strategic-weapons system that follows a **parabolic trajectory** to deliver a payload from its launch site to a predetermined fixed target.
- Ballistic missiles can carry conventional high explosives as well as chemical, biological, or nuclear munitions.

Ballistic Missile Defence System in India

- A Ballistic Missile Defence system (BMD) is a missile defence system that acts as a shield against ballistic missile attacks.
- India's BMD development **began in 1999**, after the Kargil war.
- The primary aim was to augment India's defence against possible nuclear attack from Pakistan.
- India seeks to deploy a functional 'iron dome' ballistic missile defence (BMD), incorporating both low-altitude and high-altitude interceptor missiles.

Note:



- India's BMD is **primarily developed by DRDO** with help of many public and private firms like BEL, Astra Microwave, L&T, etc.
- **Ballistic missiles of India: Agni, K-4 (SLBM), Prahaar, Dhanush, Prithvi and Trishul.**

SMART System: DRDO

Why in News

Recently, the **Defence Research and Development Organisation (DRDO)** has conducted a successful flight test of the **Supersonic Missile Assisted Release of Torpedo (SMART)** from **APJ Abdul Kalam Island** off the coast of **Odisha**.

- This follows the successful test-firing of **indigenously developed nuclear-capable hypersonic missile 'Shaurya'**.
- In 2017, the Odisha government formally named the **Outer Wheeler Island in Bhadrak district** as **APJ Abdul Kalam Island** as a tribute to the former President on his second death anniversary.

Key Points

- **About:** SMART is a **missile assisted release of lightweight Anti-Submarine Torpedo System** for **anti-submarine warfare (ASW)** operations far beyond torpedo range.
- **Functioning:**
 - SMART, when launched from a warship or a truck-based coastal battery, **takes off like a regular supersonic missile.**

- It covers most of its flight in the air at lower altitudes with **two-way data link** from the warship or an airborne submarine target detection system and **provides the exact location of the hostile submarine** to correct its flight path midway.
- Just when it approaches close enough to the submerged submarine, the missile will eject the torpedo system into the water and the autonomous torpedo will start moving towards its target to take out the submarine.
 - **Torpedo** is a **cigar-shaped, self-propelled underwater weapon**, launched from a submarine, surface vessel, or aeroplane and designed for exploding upon contact with the hulls of surface vessels and submarines.
 - **Varunastra** is the **first indigenous heavyweight ship-launched anti-submarine electric torpedo.**

➤ Significance:

- Strengthens the country's **maritime strategic capabilities.**
- A major breakthrough for **stand-off capability in anti-submarine warfare.**
 - **Project 28**, approved in 2003, is a **class of anti-submarine warship corvettes** currently in service with the Indian Navy. It includes INS Kamorta, INS Kadmatt, INS Kiltan and INS Kavaratti.
 - **Project 75** is a programme by the Indian Navy that entails **building six Scorpene-Class attack submarines** (Kalvari, Khanderi, Karanj, Vela, Vagir and Vagsheer).



Note:



drishti

Miscellaneous

Highlights

- Nobel Prize 2020
- Indian Air Force Day
- World Space Week

Nobel Prize 2020

Why in News

The **Nobel Prizes** regarded as the most prestigious awards given for intellectual achievement in the world are awarded annually from a fund bequeathed for that purpose by the Swedish inventor and industrialist **Alfred Nobel**.

- It is announced every year for excellence in **Physics, Chemistry, Medicine, Literature, Economics**, and a distinguished achievement towards humanity – commonly known as the **Nobel Peace Prize**.

Physiology/Medicine

- The Nobel Prize-2020 has been awarded to American medical researchers and virologists **Harvey J Alter** and **Charles M Rice**, and British scientist **Michael Houghton** for the **discovery of Hepatitis C** which was discovered in 1982 by screening millions of DNA samples.
 - The discovery of **Hepatitis C** virus revealed the cause of the remaining cases of chronic hepatitis and made possible blood tests and new medicines that have saved millions of lives.

Hepatitis

- Hepatitis refers to an **inflammatory condition of the liver**.
- It's commonly caused by a viral infection, but there are other possible causes of hepatitis like autoimmune responses, medications, drugs, toxins, and alcohol.
- There are 5 main **hepatitis** viruses, referred to as **types A, B, C, D, and E**.
- **World Hepatitis Day** is observed each year on **28th July** to enhance awareness of viral hepatitis.

Hepatitis C

- Hepatitis C is caused by the **Hepatitis C Virus (HCV)**.
- It is transmitted through direct contact with infected body fluids, typically through injection drug use and sexual contact.
- According to the World Health Organization, about 71 million people in the world have chronic infection with the Hepatitis C virus, which is also a major cause of liver cancer.
- A vaccine for the disease has still not been developed but it can be treated with the help of antiviral drugs.

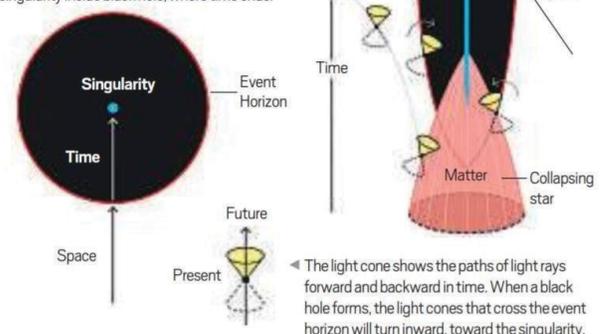
Physics

- The **Nobel Prize in Physics** for the year 2020 was awarded to three astrophysicists **Roger Penrose from the UK, Reinhard Genzel from Germany, and Andrea Ghez from the USA**.
- Roger Penrose received half of this year's prize for the discovery that a **black hole** formation is a robust prediction of the general theory of relativity.

BLACK HOLES & SINGULARITY

CROSS SECTION OF A BLACK HOLE

When a massive star collapses under its own gravity, it forms a black hole that captures everything passing its event horizon. Not even light can escape. At the event horizon, time replaces space and points only forward. The flow of time carries everything towards a singularity inside black hole, where time ends.



Note:

- The theory explains gravity, as objects try to follow a straight line through a universe whose geometry is warped by matter and energy. As a result, planets, as well as light beams, follow curving paths.
- **Genzel and Ghez** received the second half of the prize for the discovery of a supermassive black hole at the centre of the Milkyway galaxy, now known to be the Sagittarius A*.
- It has a mass four million times that of the Sun and is confined to an area roughly the size of our Solar System.

Black Hole

- The term '**black hole**' was coined in the mid-1960s by **American Physicist John Archibald Wheeler**.
 - Black hole refers to a point in space where matter is so compressed as to create a gravity field from which even light cannot escape.
 - Black-holes were **theorized by Albert Einstein in 1915**.
- All the black holes observed so far belong to **two categories**:
 - One category 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.
- 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).
 - The image was made possible by the Event Horizon Telescope which is a group of **8 radio telescopes** (used to detect radio waves from space) located in different parts of the world.
- **Gravitational waves** are created when two black holes orbit each other and merge.

Chemistry

- **Emmanuelle Charpentier of France and Jennifer A Doudna of the USA** have been awarded the 2020 **Nobel Prize** in Chemistry for developing **CRISPR/Cas9** genetic scissors, one of gene technology's sharpest tools.
 - It is for the first time a Nobel science prize has gone to a women-only team.
- The CRISPR/Cas9 genetic scissors can be used to change

- the deoxyribonucleic acid (DNA) of animals, plants and microorganisms with extremely high precision.
- The CRISPR/Cas9 tool has already contributed to significant gains in crop resilience, altering their genetic code to better withstand drought and pests.
- The technology has contributed to new cancer therapies.

CRISPR Technology

- The **CRISPR (short for Clustered Regularly Interspaced Short Palindromic Repeats)** technology for gene-editing was **first developed in 2012**.
- It makes gene sequencing very easy, simple and extremely efficient providing nearly endless possibilities.
 - Editing, or modifying, gene sequences is not new and has been happening for several decades now, particularly in the field of agriculture, where several crops have been genetically modified to provide particular traits.
- The technology replicates a natural defence mechanism in *Streptococcus pyogenes* that use a similar method to protect itself from virus attacks.
 - A DNA strand, when broken, has a natural tendency to repair itself but the auto-repair mechanism can lead to the re-growth of a problematic sequence.
 - Scientists intervene during this auto-repair process by supplying the desired sequence of genetic codes, which replaces the original sequence.

Peace

- The 2020 Nobel Peace Prize has been awarded to the **World Food Programme (WFP)**, a **United Nations (UN)** agency, for its efforts to combat hunger, bettering conditions for peace in conflict-affected areas and preventing the use of hunger as a weapon of war and conflict.
 - The WFP is the UN's primary agency that works upon Eradicating Hunger which is one the UN's **Sustainable Development Goals**.
 - The WFP provided assistance to close to 100 million people in 88 countries who are victims of acute food insecurity and hunger.
- **WFP in India:** It has been working in India since 1963 where it has focused upon reforms in the **Targeted Public Distribution System (TPDS)** and provided policy inputs, advocacy and technical assistance for improving access to food.

Note:

- The WFP has proposed unique initiatives like Automatic Grain Dispensing Machine (Annapurta) and Mobile Storage Units for the effective implementation of TPDS.

World Food Programme

- It was established in 1961 by the **Food and Agriculture Organisation (FAO)** and the United Nations General Assembly (UNGA) and became a full-fledged UN programme in 1965.
- **Headquarter:** Rome, Italy.

Economic Sciences

- American economists, **Paul Milgrom and Robert Wilson** have been awarded the Sveriges Riksbank Prize in Economic Sciences, 2020 for their work on commercial auctions.
 - The award is **popularly but incorrectly known as Nobel Prize in Economic Sciences**, (as it is not one of the five Nobel prizes that Alfred Nobel established in his will in 1895, it is not a Nobel Prize).
- It was **created in 1968** by a donation from Sweden's central bank Sveriges Riksbank to the Nobel Foundation to commemorate the bank's 300th anniversary and includes a 10 million Swedish kronor award money (₹8.33 crores roughly).
- Milgrom and Wilson improved the auction theory and invented new auction formats for auctioning off many interrelated objects simultaneously, on behalf of a seller motivated by broad societal benefit rather than maximal revenue.
 - Robert Wilson developed the theory for auctions of objects with a common value – a value which is uncertain beforehand but, in the end, is the same for everyone.
 - Paul Milgrom formulated a more general theory of auctions that not only allows common values, but also private values that vary from bidder to bidder.
 - Their work will benefit sellers, buyers and taxpayers around the world. It will help in auctioning goods and services, such as radio frequencies, which are difficult to sell in traditional ways.

Auction Theory

- **Auction theory** studies how auctions are designed, what rules govern them, how bidders behave and what outcomes are achieved.

- Auctions are important to economists because they are the most widely used and also the most efficient mechanism to allocate scarce resources.
- The allocation of scarce resources, in turn, matters to economists because there is a limited supply of resources on earth when compared to unlimited human needs, and hence they need to be allocated only to the most urgent needs of society.
- **Application of auction:** Auctions happen almost everywhere in the modern world. Even the sale of groceries in retail stores is based on an auction, albeit an implicit one that is relatively slow to adjust to changing market conditions.
 - The oldest form of auction is the auction of a bankrupt person's property to pay off his creditors. This simple design of such an auction is the highest open bidder getting the property (or the commodity in question).
 - Allocation of capital good: More sophisticated and explicit auction mechanisms are used in the allocation of capital goods such as spectrum and minerals.
 - Over time, the format of auctions has widened to include other commodities such as carbon dioxide emission credits, electricity or the right to collect the local garbage etc.
 - For e.g. a supermarket manager, just as an auctioneer, tries to price his goods based on how much of it is sold during a certain day, week, or month. If there is a huge demand for a certain product and shelves empty quickly, the supermarket manager will raise its price to prevent a shortage. If another product fails to sell as fast as expected, its price may be lowered in order to clear any unsold inventory.
 - But whether it is the auction of spectrum waves or the sale of fruits and vegetables, auctions are at the core of allocation of scarce resources in a market economy.
- **Auction models:** Different auction models are needed for depending upon the commodities, purpose of the auction and the entities conducting the auction.
 - For e.g. Maximizing the profit may be the motive of a private auction while making a service affordable can be the purpose of auctioning

Note:



a service by the government. Wrong auction design can lead to a second-hand market where companies trade among themselves with little revenue accruing to the government or little benefit to the public.

- How an auction is designed, has a tremendous impact not just on the buyers and the sellers but also on the broader society.
- **Key variables:** Three key variables need to be understood while designing an auction.
 - Rules of Auction i.e. closed/sealed bids, single bids versus multiple bids.
 - Commodity or service being put up for auction i.e. how does each bidder value an item.
 - Uncertainty regarding which bidder has what information about the object, or even the value another bidder associates with the object.

Literature

- The **Nobel Prize in Literature 2020** has been awarded to the **USA poet Louise Glück** “for her unmistakable poetic voice that with austere beauty makes individual existence universal.”
 - Her poetry focuses on the painful reality of being human, dealing with themes such as death, childhood, and family life.
 - She is the **fourth woman** to win the prize for literature since 2010, and only the 16th since the Nobel prizes were first awarded in 1901.
- The **last American** to win was **Bob Dylan** in **2016**.
- Glück won the **Pulitzer Prize** in 1993 for her collection **The Wild Iris** and the **National Book Award** in 2014.
- **Criticism of Last year’s Winner:**
 - Choice of Austrian novelist **Peter Handke** led to wide criticism.
 - Handke was a known supporter of the Serbs during the **1990s Yugoslav war** and spoke at the funeral of former Serb leader Slobodan Milosevic, who was accused of genocide and other war crimes.
 - Last year also saw **Polish author Olga Tokarczuk** belatedly announced as the **winner of the 2018 literature prize** which had been suspended for a year after a sexual assault scandal and financial misconduct allegations rocked the **Swedish Academy**, which awards the annual Nobel Prize for Literature.

- The Nobel Prize comes with a medal and a prize sum of 10 million Swedish kronor.

Contribution of Indians

- **Poet and writer Rabindranath Tagore** was the first non-European and Indian to get a **Nobel Prize in 1913 in literature**.
- India received its **first Nobel Prize in physics in 1930**, when scientist Sir Chandrasekhara Venkata Raman was awarded “for his work on the scattering of light and for the discovery of the effect named after him”. This phenomenon is now known as **Raman Effect**.
- **Har Gobind Khorana** shared his **1968 Nobel Prize in physiology or medicine** with Robert W Holley and Marshall W Nirenberg. The trio was honoured “for their interpretation of the genetic code and its function in protein synthesis”.
- **Mother Teresa** won the **1979 Nobel Peace Prize**. She was a Roman Catholic nun who was born in Albania. She founded the Missionaries of Charity in Kolkata and worked all her life for the poor. She became an Indian citizen as well. She received the prize for her “work in bringing help to suffering humanity”.
- Indian physicist **Subramanyan Chandrasekhar** was awarded the 1983 Nobel Prize in Physics, which he shared with physicist William Alfred Fowler. He was awarded “for theoretical studies of the physical processes of importance to the structure and evolution of the stars”.
- **Amartya Sen** was the winner of the **1998 Sveriges Riksbank Prize in Economic Sciences**. He was rewarded “for his contributions to welfare economics”.
- India’s **first Nobel Prize in the field of chemistry** was won by **Venkatraman Ramakrishnan**. He received the 2009 Nobel Prize “for studies of the structure and function of the ribosome”. He shared the award with Thomas A Steitz and Ada E Yonath.
- **Kailash Satyarthi, along with Malala Yousafzai**, received the **Nobel Peace Prize in 2014**. He received the honour “for the struggle against the suppression of children and young people, and for the right of all children to education.”
- The **Indian-American economist Abhijit Banerjee** was awarded the Nobel Prize-2019 in economics

Note:

along with Esther Duflo and Michael Kremer. The trio received the award for their “experimental approach to alleviating global poverty.”

Indian Air Force Day

- Every year, the Indian Air Force (IAF) celebrates the Indian Air Force Day on **8th October**.
 - On this day, the **Air Force in India was officially raised in 1932** as the supporting force of the Royal Air Force of the UK.
 - **2020** marked the **88th** Air Force Day.
- **Celebrations:**
 - The day is being marked by the main event comprising a **parade and flypast at Hindon Air Force Base** (Ghaziabad) along with events at IAF establishments across the country.
 - In 2020, the **Tejas LCA, Mig-29 and 21** and **Sukhoi-30** along with newly inducted **Rafale jets** will be on the show.
 - It will also have **helicopters** like **Chinook, Apache**, etc.
- **History:**
 - **1933:** First operational squadron.
 - **1940s:** After participation in **World War II** (1939-45), the Air Force in India came to be known as the **Royal Indian Air Force**.
 - **1950:** It became the **Indian Air Force** after the **republic** came into being.
- **Facts:**
 - India Air Force is the **fourth largest in the world** after the USA, China and Russia.
 - **Headquarters:** New Delhi.
 - **Motto:** “**Touch the Sky with Glory**”, which has been taken from the **eleventh chapter of the Bhagavad Gita**.
 - The **President of India** holds the rank of **Supreme Commander of the Air Force**.
 - The **Chief of Air Staff**, an air chief marshal is responsible for the operational command of the air force.
- **Operations and Participation:**
 - After independence, IAF **participated in Indian wars against Pakistan and China**.
 - **Operation Meghdoot:** It was launched by Indian Army, Indian Air Force and **paramilitary forces** on

13th April 1984 to secure the control of the heights predominating the **Siachen glacier**.

- IAF took part in **relief operations during natural calamities** such as Gujarat cyclone in 1998, the tsunami in 2004, etc.
- IAF works with the **United Nations’ peacekeeping missions**.

World Space Week

Why in News

Recently, during the celebrations of **World Space Week**, the **India Meteorological Department** (IMD) has announced that it would soon launch a dynamic, impact-based **cyclone** warning system.

- The warning system **aims at minimising economic losses and damage to property due to the cyclones** that hit Indian coasts every year.

Key Points

- World Space Week is an **international celebration of science and technology** and their contribution to the betterment of the human condition.
 - It is **coordinated by the United Nations** with the support of the **World Space Week Association** (WSWA), a non-profit organisation.
- The **United Nations General Assembly** (UNGA) declared in **1999** that World Space Week would be held each **year from 4th-10th October**. These **dates commemorate two events:**
 - **4th October 1957:** Launch of the first human-made Earth satellite, **Sputnik 1**, thus opening the way for space exploration.
 - **10th October 1967:** The signing of the **Outer Space Treaty** (Treaty on Principles Governing the Activities of States in the Exploration and Peaceful Uses of Outer Space including the Moon and other celestial bodies).
- **Objectives:**
 - Provide unique leverage in space outreach and education.
 - Educate people around the world about the benefits that they receive from space.
 - Encourage greater use of space for sustainable economic development.
 - Demonstrate public support for space programs.

Note:



- Excite young people about science, technology, engineering, and math.
- Foster international cooperation in the space sector.
- **2020 Theme:** "Satellites Improve Life."
- It shows the **importance of satellites in daily life**

and how human lives are affected by satellites such as in **communications, environmental monitoring, transportation, weather forecasting, telemedicine, science**, and in many other ways.

- **Indian examples:** EMISAT, RISAT-2B, Cartosat-3, Microsat-R and Kalamsat-V2, etc.



Note:

Key Points

Details

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Summary

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