



CURRENT AFFAIRS

September 2020

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September - 2020

1. India's GDP Contracts to Negative Growth:

- India's GDP rate contracts to 23.9% in the first quarter of the financial year 2020-21.
- When the Ministry of Statistics and Programme Implementation (MoSPI) released India's GDP data for the first quarter of the current financial year there was a substantial contraction of the GDP.
- The broad consensus was that the decline would not exceed 20% but the GDP contracted by 24% in Q1 (April, May, and June).
- The total value of goods and services produced in India in April, May and June in this year is 24% less than the total goods and services produced last year.
- All the major indicators of growth of the economy, from the production of cement to the consumption of steel, showed deep contraction.
- The total telephone subscribers saw a contraction in Q1.
- Due to wide-spread lockdown, the data quality is also sub-optimal.
- With GDP contracting, it is believed that conservative estimate would be a contraction of 7% for the full financial year.
- The gross value added (GVA) for agriculture grew by 3.4%.
- Barring the agriculture sector, the data showed that all other sectors of the economy saw a fall in GVA.
- The worst affected areas were construction (-50%), hotels, trades and other services (-47%), manufacturing (-39%) and mining (-23%).
- These sectors are contracting so sharply that their output and incomes are falling and this would lead to a decline in employment.

1.2. Causes of GDP Contraction:

- The GDP is generated from the four engines for growth.
- The first biggest engine is the consumer demand from the individuals. In the Indian economy, this accounted for 56.4% of all GDP.
- The second engine is the demand generated by private sector businesses and this accounted for 32% of all GDP in the country.
- The third engine is the demand for goods and services generated by the government and is accounted for 11% of India's GDP.
- The fourth engine is the net demand on GDP and it is the smallest engine as the country imports more than it exports.
- So for Q1, the private consumption has fallen by 27% and in terms of money the fall is Rs. 5,31,803 crores over the same quarter last year.
- The contraction is Rs 5,33,003 for the second biggest engine that is investments by businesses.
- The two biggest engines accounted for over 88% of the Indian total GDP saw a massive contraction in Q1.
- The net export demand has turned out positive in this Q1.
- This is because India's imports have crashed more than exports.
- The last engine is the government growth, shows expenditure went up by 16% but this does not compensate with the loss of demand in other sectors of the economy.

1.3. The Way to Boost GDP:

- Private individuals cut consumption when incomes fall. Similarly, private consumption falls sharply when businesses stop investing and the same is implemented in exports and imports.
- The only engine that can boost is the government.
- When the government spends more by building roads and bridges and paying salaries or by directly handing out money, the economy may revive short to medium term.
- But, the government finances are overextended and should think of some innovative solutions to generate resources.
- In this regard, the McKinsey Global Institute suggested ways to raise 3.5 per cent of the GDP by the government.
- Hope the government will find ways to boost the economy by spending on much needed infrastructure for the country.

2. World's Largest Solar Tree Developed in India:

- The scientists from CCSIR-CMERI have developed the World's Largest Solar Tree and installed it at its residential colony.
- The capacity of the solar tree is above 11.5 kW and has the annual capacity to generate 12,000-14,000 units of clean and green Power.
- The solar tree is designed to ensure maximum exposure of each solar PV panel to sunlight and has the least amount of shadow area beneath.
- A total of 35 Solar PV Panels are there in each tree with a capacity of 330 wp each.
- The arms holding the solar panels are flexible and can be adjusted as per requirement.
- The energy generated can be monitored daily or real-time.
- This solar tree has certain customizable features for application at diverse sites such as usage in Agricultural activities like high capacity pumps, e-tractors and e-power tillers.
- Each solar tree has the potential to save 10-12 tons of Carbon dioxide emissions that are released into the atmosphere as Greenhouse Gases.
- The surplus power generated can be fed into an Energy grid.
- These solar trees can be aligned with agriculture and provide a consistent economic return and can also make farming an economic and energy sustainable practice.
- The cost of each solar tree is Rs. 7.5 lakhs.
- For developing a Renewable Energy based Energy Grid, MSMEs can align their business model with the Pradhan Mantri Kisan Urja Suraksha evem Mahabhiyan (PM KUSUM) scheme for farmers.
- The solar tree can incorporate IoT based features such as CCTV surveillance in agricultural fields, wind speed gauging, rainfall prediction, real-time humidity monitoring, and soil analysis sensors.
- The e-Suvidha Kiosks developed by the CSIR-CMERI can be connected to the solar trees for the real time access to the agriculture database and e-NAM.
- The world's largest solar tree is a quantum leap towards making carbon negative and energy reliant India.

2.1. PM KUSUM:

- Pradhan Mantri Kisan Urja Suraksha evem Utthan Mahabhiyan (PM KUSUM) Scheme is a program launched by the Ministry of New and Renewable Energy.
- The scheme encourages farmers of the country to install solar water pumps and grid-connected solar power generation plants.
- The aim of the scheme is to generate solar energy capacity of 25,750 MW by 2022.
- The scheme is entirely centrally-sponsored to the tune of Rs. 34,422 crore which also includes service charges to the installation agencies.

There are three components in the scheme:

- **Component A:** To install 10000 MW capacity of decentralised ground mounted grid connected renewable power plant with each individual power plant having a capacity of 2 MW.
- **Component B:** with an individual pump capacity of 7.5 HP, across the country, there will be an installation of 17.50 standalone solar powered agriculture pumps.
- **Component C:** solarisation of 10 lakh grid-connected agri pumps with each having a capacity of 7.5 HP.

2.3. Solar Energy:

- Solar energy is one of the cleanest energy resources.
- India has a target of generating 100GW of solar energy by 2022.
- Innovations in the field are the need of the hour to increase the solar energy generation capacity.
- The solar tree developed by the CSIR-CMERI is a step in the right direction.
- As its potential applications show, the solar tree will be a game changer in solar energy generation.
- It will also solve the problem of using large patches of land to generate solar power.
- The solar tree uses less land to generate more power. Its innovative design will help even small farmers with less land to install the tree and they generate extra income through power generation.

3. Quantum State Interferography:

- Scientists experimented new ways to manipulate quantum states and found a new way to characterize and estimate such states.
- This method of characterization is called Quantum State Interferography.
- Scientists from Raman Research Institute (RRI) found the new way of quantum state estimation.
- This method interferes with the state of the system both two dimensional qubits, the simplest quantum system as well as higher-dimensional qubits from an interference pattern.
- This work is partially supported by the QuEST network programme of Department of Science and Technology (DST).
- The Quantum State Topography (QST) is used to determine the unknown quantum state. This method involves the measuring projection of the quantum state in various directions.
- When the dimensions are large the operations needed to perform tomography increase quadratically and the experimental setting often needs to change many times.
- In the new method, without any change in the experimental setup, it is possible to infer the unknown quantum state.
- This technology requires two interferometers from which many interferograms can be obtained to reconstruct the state and also provides a 'black box' approach to quantum state estimation.
- This method provides a true single-shot estimation of the quantum state.

3.1. What is Qubit?

- A qubit is a 2-dimensional quantum system and requires 2 complex numbers to determine state estimation.
- In the new method the state estimation is done by the intensity and phase shift of the interference patterns.
- Manipulation of quantum states is the most crucial operation in any quantum technology protocol such as quantum computing, quantum communication, quantum metrology. The new technique is a handy and effective tool in comparison to conventional techniques with a tremendous scaling gain involving the use of interferometry.

4. Commercial Flights between UAE and Israel:

- The historic first commercial flight arrived in Abu Dhabi from Tel Aviv after the historic peace deal between the two countries.
- The flight arrival marks the normalization of ties between Israel and the UAE.
- On the cockpit of the EI AI flight, the word 'peace' was written in Arabic, Hebrew and English.
- The flight landed at the VIP terminal in the Emirates capital.
- Alongside the Star of David banner, a US flag was present.
- This is viewed as a historic journey in the Middle-East.
- Saudi Arabia allowed the "historic flight" to cross its air space.
- The agreement to normalize ties was announced on August 13. This makes UAE the first Gulf country and only the third Arab nation to establish relations with Israel.
- The talks in Abu Dhabi aims to boost cooperation in areas such as aviation, tourism, trade, energy, health and security.
- The agreement between the UAE and Israel was unveiled and the Emirates repealed the 1972 law boycotting Israel.
- The new policy permits to enter, exchange or possess Israeli goods and products of all kinds in the UAE.
- The UAE opens the door for unbridled trade, tourism, investments and exchange between the Middle East countries.

The Impact:

- The normalisation of ties between Israel and the UAE is a new turning point in the Gulf politics.
- UAE, which has been recently sidelined by the many Arab countries is following independent foreign policy which benefits its people.
- While the emirates is a financial hub, Israel is a cyber superpower.
- The normalisation of ties between the two countries also gives a hope that peace is possible in the Middle East and one day Saudi Arabia, the arch rival of Israel, may follow suit and normalise ties with Israel.

5. Monitoring the Status of SHG NPAs:

- There is a steady rise in the proportion of non-performing assets (NPAs) in the bank loans given to Self-Help Groups (SHGs).
- The Union Ministry has directed the states to monitor the status of NPAs district-wise and to take measures to recover overdue payments.
- The Ministry conducted a performance review committee meeting.
- The important agenda of the meeting was the issue of NPAs in bank loans to the SHGs.
- They also reviewed the Deendayal Antyodaya Yojana- National Rural Livelihoods Mission under which the government provides support to SHGs with bank linkages.
- According to the agenda, the outstanding bank loans is about Rs. 54.57 lakh SGHs across the country.
- At the end of March, the amount is about Rs. 91,130 crore of which Rs. 2,168 crore or 2.37% were NPAs.
- There is a rise of 0.19% in overall NPAs in SHG loans when compared to the financial year 2018-19.
- However, 22 States and Union territories had a higher ratio of NPAs in SHGs loans than the national average.
- To avoid the account to become irregular NPA, the State Rural Livelihood Missions (SRLMs) were told to take necessary measures to deposit the amount in the banks before September 20.
- Uttar Pradesh has 71,907 SHGs and reported 36.02% of the loans were taken by the groups by the end of March 2020. At the beginning of the last financial year, it was 22.16%.

- With Uttar Pradesh seeing a 15% jump, NPAs from UP make up more than a quarter of the loans taken by SHGs.
- The reports from the other states were, Punjab had an NPA share of 19.25%, Uttarakhand- 18.32% and Haryana-10.18%.
- In Arunachal Pradesh, the number of SGHs was 209 but the NPA proportion stood as high as 49%.
- In Madhya Pradesh, Assam, Gujarat, Maharashtra, Nagaland, Himachal Pradesh and Tripura had NAPs comprised of 5-10% of the loan amounts of SGHs.
- In Goa, Chhattisgarh, Odisha, Tamil Nadu, Rajasthan, Jharkhand, Meghalaya, Karnataka, Telangana and Kerala, the NPAs were less than 5% but higher than the national figure of 2.37%.
- The states and Union territories that had NPA share below the national average were Manipur- 2.13%, Sikkim- 1.44%, West Bengal- 1.38%, and Bihar- 1.29%, Jammu and Kashmir-1.07%, Andhra Pradesh-0.78% and Mizoram- 0.62%.
- The meeting stressed on taking necessary measures on timely repayment of loans and how to institutionalize in all bank branches.

5.1. Self-Help Groups:

- A Self-Help Group (SHG) is a women community-based group with 10-20 members.
- These are groups from similar social and economic backgrounds.
- These groups are self-governed and are peer controlled information group of people.
- The SHGs act as a vehicle for the poor who are facing problems like poverty, lack of formal credit and illiteracy.
- The Self-Help Group encourages self-employment to eradicate poverty.
- The SHGs provide collateral-free loans decided by the group at the market rate.
- The group members collect their savings and deposit it in the bank. In return to the deposit, they receive an easy access to loans with a low rate of interest.
- SHGs have emerged as the most effective system for the delivery of microfinance services to the poor.
- SHGs borrow from the bank under NABARD's 'SHG Bank Linkage' program.

6. Mission Karmayogi for Strengthening Civil Services:

- The Union Cabinet has approved the launching of a National Programme for Civil Services Capacity Building (NPCSCB) called Mission Karmayogi.
- Prime Minister Shri Narendra Modi led the HR council to approve and monitor the Civil Services Capacity Building Plans.
- The Public Human Resource Council (HR) consists of Union Ministers, Chief Ministers, eminent public HR practitioners, thinkers, global thought leaders and public service functionaries.
- The main aim of the mission is to prepare the Indian Civil Servants for the future by making them more creative, constructive, innovative, imaginative, professional, energetic, transparent and technology-enabled.
- The civil servants will be able to ensure efficient service delivery with high quality standards.

The Framework:

- The NPCSCB was launched with the following institutional framework-
- Public Human Resource Council (HR).
- Capacity Building Commission.
- Special Purpose Vehicle for operating and owning digital assets.
- Technological platform for online training.
- The Cabinet Secretary heading Coordination unit.

Features:

- The NPCSCB is carefully designed to lay the foundations for capacity buildings for Civil Servants.
- The program will be implemented by setting up an Integrated Government Online Training – iGOTKarmayogi Platform.
- The core guidelines of the programme are-
- Supporting the transition from ‘Rules based ’to ‘Roles based ’management.
- Allocating work to the civil servants by aligning their competencies with the required post.
- Emphasizing on ‘on-site learning’.
- Creating an ecosystem of shared training infrastructure which includes learning materials, personnel and institutions.
- A Framework of Roles, Activities and Competencies (FRACs) will be developed to calibrate all Civil Service positions.
- For the identified FRACs, learning content will be created and delivered in every government entity.
- An opportunity to the civil servants to continuously build and strengthen their Behavioural, Functional and Domain Competencies.
- To enable all the Central ministries and Departments to directly invest their resources towards creating and sharing the collaborative and common ecosystem of learning through an annual financial subscription for every employee.
- To partner with the best in class learning content creators such as public training institutions, start ups, universities and individual experts.
- To undertake data analytics of data emit provided by IGOT-Karmayogi.

Objectives of the Capacity Building Commission:

- To assist the PM Public Human Resources Council for the approval of Annual Capacity Building Plans.
- To supervise all Central Training Institutions dealing with civil services capacity building.
- To create shared learning resources and resource centres.
- To supervise and coordinate the implementation of the Capacity Building Plans.
- To make standardization of training and capacity building, pedagogy and methodology.
- To set rules for common mid-career training programs.
- To suggest policy interventions in the areas of HR Management and Capacity Building on the Government.

6.1. iGOT-Karmayogi:

- The iGOT-Karmayogi brings the scale and state-of-art infrastructure to improve the capacities of the officials in India.
- The platform is expected to evolve into a vibrant and world-class market place for content.
- The proposed competence framework integrates with capacity building, service matters like confirmation after probation period, work assignment, deployment and notification of vacancies.
- Financial Implications
- A sum of Rs. 510.86 crore will be spent over 5 years from 2020-2021 to 2024-25, to cover 46 lakhs employees.
- The expenditure is funded by multilateral assistance to the tune of \$50 million.
- A Special Purpose Vehicle (SPV) for NPCSCB will be established under the Companies Act Section 8, 2013.
- The SPV is a non-profit company and will be managed by the iGOT-Karmayogi platform.
- The SPV will hold all intellectual property rights.

- An appropriate monitoring and evaluation framework will also be present to generate the dashboard view if Key Performance Indicators.

7. Discovery of the Farthest Star Galaxy:

- Indian astronomers have discovered the farthest star galaxy in the universe, a landmark achievement in space mission.
- The discovery was done by India's first Multi-Wavelength Space Observatory "AstroSat".
- The AstroSat detected extreme UV-light from a galaxy located 9.3 billion light-years away from the Earth.
- A team of astronomers from the Inter-University Centre for Astrophysics (IUCAA) Pune discovered the galaxy and named it as AUDFs01.
- The AstroSat was able to achieve this because of the background noise in the UVIT detector is much less than the Hubble Space Telescope of US-based NASA.
- The UVIT has excellent spatial resolution and high sensitivity.
- This discovery gives clue to how the dark ages of the universe had ended and how there was light in the universe.

7.1. AstroSat Mission:

- The AstroSat was launched by the Indian Space Research Organization (ISRO) on September 28, 2015.
- AstroSat is India's first mission dedicated towards studying celestial sources of X-ray, UV and optical spectral bands.
- A unique feature of AstroSat is its ability to detect multi-wavelength sources simultaneously.

Objectives of AstroSat Mission are:

1. understanding the high energy processes in binary star systems containing neutron stars and blackholes.
2. estimating magnetic fields of neutron stars
3. studying high energy processes and star birth regions beyond our galaxy
4. detecting brief, yet new X-ray sources in the sky
5. conducting a limited survey on ultraviolet region of the Universe

8. Rice-Diabetes Risk Factor:

- A study indicates that the high consumption of white rice regularly is linked with an increased risk of diabetes.
- The study was conducted on 1,32,373 individuals from 21 countries over 9.5 years.
- During the period of research 6,129 individuals developed diabetes.
- The highest risk of diabetes is seen in South Asia which has the highest consumption of white rice per person per day.
- In South Asia, the highest consumption of white rice is at 630 grams a day followed by Southeast Asia 239 gm per day and China 200 gm per day.
- The observations were collaboratively done by the Prospective Urban Rural Epidemiology (PURE) study anchored by the Population Health Research Institution (PHRI), McMaster University, Hamilton, Canada and Hamilton Health Sciences.
- This is the largest study on the intake of white rice and its link with diabetes.
- This is also the first research done across different countries.
- The study confirms that white rice intake is the major contributor to the diabetes epidemic in South Asia.

- The study shows that excess rice consumption leads to postprandial glucose spikes. This leads to compensatory hyperinsulinemia which is excess secretion of insulin to maintain euglycemia, normal blood sugar levels.
- The study indicates that over the time the b-cells become exhausted leading to their failure and diabetes.
- The study is inconclusive on the rice-diabetes link in China as a different variety of rice is consumed in China. The rice there is sticky and the consumption of rice with vegetables, pulses and meat blunts the Glycemic Load (GL) of rice.
- The study recommends not to stop eating white rice but to make it 20-30% of meal a day instead of 70-80% of meal a day.
- The researchers recommend replacing rice with proteins, salads and vegetables, and healthy fats from nuts and seeds.

Other Factors:

- The study acknowledges the role of other factors that causes diabetes.
- Some of the factors are reduced physical activity, an increase in obesity rates, and high consumption of carbohydrates, family history and other diabetogenic factors.
- Diabetes in India
- According to the International Diabetes Foundation Diabetes Atlas, one in six diabetic people is from India.
- An estimated 77 million people in India are diabetic making India one among the top 10 diabetic countries.
- According to the IDF Diabetes Atlas, while China leads the world in diabetic patients with 116 million, India is in the second position.
- The Atlas has kept India in the second slot up to the year 2045.
- Though to be an urban disease, in our country, the number of persons with diabetes in rural areas is also rising.
- Also, there is a wide variance in the prevalence of the disease among states of the country.
- While Southern India and other rich states have high prevalence, other states have low prevalence.
- In our country, diabetes is slowly becoming an epidemic. The growing incomes, lifestyle, consumption of carbohydrate-rich foods and less physical activity are the leading causes of diabetes in the country.
- The link between the consumption of white rice and diabetes is suspected and the new study has confirmed the same.

Conclusion:

- Rice is a staple food in India. Avoiding it right away is not a solution. As the study says, reducing its intake will help in avoiding diabetes.
- Based on the study, the government should rethink its approach to prevent diabetes in the country.
- The non-communicable disease is an economic burden on the country. There is a need for a national policy for the prevention of diabetes as the disease is becoming an epidemic.
- A multi-dimensional approach in the form of health education, generating awareness at the school level, promoting physical activities, awareness on eating healthy, urban planning and more can go a long way in preventing the disease. This, along with augmenting the public health care system to treat diabetes will help the country tackle the epidemic.

9. Low-Cost Demand Printing Technology:

- Researchers developed a low-cost drop-on-demand for printing technique.
- This technique generates a wide range of droplet sizes using a variety of inks.

- This technology is developed by the Indian Institute of Sciences (IISc) Centre for Nano Science and Engineering (CeNSE) researchers.
- This technology can be used for 3D printing of living cells, ceramic materials, machine components and electronic circuits.
- Currently, printers use inkjet printers to bio-printers that dispense living cells that have a nozzle with a small opening to eject droplets.
- The particles from the ink or a cell suspension can clog the start. This limits the number of particles that can be loaded initially. The layer thickness to print is also limited.
- Researchers demonstrated drop-impact printing to print 3D pillars of different sizes, an electronic circuit for semiconductors device applications and bio-based droplet arrays for cell culture.
- This technique is unique as it can print a wide range of droplet sizes by using different kinds of inks for different applications.

Drop-Impact Technology:

- The new technology replaces the nozzles with a mesh, covered with chemically treated nanowires. This helps to repel water.
- The water droplet bounces back when a large droplet impacts on this mesh.
- The liquid is ejected through the mesh pore as a jet.
- This liquid breaks to create a micro-scale droplet and then printed onto the surface.
- The short contact time of the impacting droplet with the mesh is about 10ms.
- The researchers said that the particles in ink do not get a chance to clog the mesh.
- So, ink with large quantities of nanoparticles can be loaded and enabling printing of very thick lines in a single cycle.
- The maintenance of the mesh is easy as it can be easily cleaned and reused.
- The operational cost is reduced when compared with the conventional method. This is because the mesh costs only a small fraction of the nozzles that are replaced.
- Researchers developed nanostructured surfaces that can repel water.
- While studying this phenomenon, the velocity of the ejected jet was more elevated than the momentum of the impacting droplet.
- The team captured high-speed videos, 50,000 to 80,000 frames per second of these impacting droplets.
- They found that an air cavity was being formed at the droplet centre.
- During the recoil phase, the cavity collapsed focusing on the kinetic energy into a single point.
- This resulted in the generation of a single droplet.
- The size of the droplets ejected can be adjusted with the pore size of the mesh.

10. BRAP Rankings of States:

- The Union Minister of Finance and Corporate Affairs announced the fourth edition of Business Reform Action Plans (BRAP) ranking of states.
- The announcements were made in the presence of Minister of Railways, Minister of Commerce and Industry, Minister of State of the Ministry of Housing and Urban Affairs, Minister for Commerce and Industry, Ministry of Civil Aviation, Chief Ministers of Uttarakhand and Tripura, LGs of J&K, Industry Ministers of States and Union Territories.
- The implementation of Business Reform Action Plans ranking of states started in 2015.
- Till now, the rankings of the state have been released for the years 2015, 2016, 2017 and 2018.
- The BRAP 2018-19 includes 180 reform points covering 12 business regulatory areas.
- The main objective of BRAP is to attract investments and to increase ease of doing business in each state.

- This time the ranking gave full weightage to the feedback from over thirty thousand respondents at the ground levels.
- The top rankings of the states are Andhra Pradesh, Uttar Pradesh and Telangana.

State Rankings: State BRAP 2019

S. No.	State/UT	Rank 2019
1	Andhra Pradesh	1
2	Uttar Pradesh	2
3	Telangana	3
4	Madhya Pradesh	4
5	Jharkhand	5
6	Chhattisgarh	6
7	Himachal Pradesh	7
8	Rajasthan	8
9	West Bengal	9
10	Gujarat	10
11	Uttarakhand	11
12	Delhi	12
13	Maharashtra	13
14	Tamil Nadu	14
15	Lakshadweep	15
16	Haryana	16
17	Karnataka	17
18	Daman and Diu	18
19	Punjab	19

S. No.	State/UT	Rank 2019
18	Daman and Diu	18
19	Punjab	19
20	Assam	20
21	Jammu and Kashmir	21
22	Andaman & Nicobar	22
23	Dadra & N. Haveli	23
24	Goa	24
25	Mizoram	25
26	Bihar	26
27	Puducherry	27
28	Kerala	28
29	Arunachal Pradesh	29
30	Chandigarh	29
31	Manipur	29
32	Meghalaya	29
33	Nagaland	29
34	Odisha	29
35	Sikkim	29
36	Tripura	29

Performers: State BRAP 2019

Region	Best Performers in 2019	Consistently ranked best in last 4 rankings	Most improved in 2019 (Rank)	Top improvers since 2015 (Rank)
North	Uttar Pradesh: Rank 2	Rajasthan	Uttar Pradesh: Improved to Rank 2 in 2019 from Rank 12 in 2018	Himachal Pradesh: Improved to Rank 7 in 2019 from Rank 17 in 2015
		Uttar Pradesh	Himachal Pradesh: Improved to Rank 7 in 2019 from Rank 16 in 2018	Uttarakhand: Improved to Rank 11 in 2019 from Rank 23 in 2015
West	Madhya Pradesh: Rank 4	Gujarat	Madhya Pradesh: Improved to Rank 4 in 2019 from Rank 7 in 2018	Madhya Pradesh: Improved to Rank 4 in 2019 from Rank 5 in 2015
East	Jharkhand: Rank 5	Chhattisgarh	West Bengal: Improved to Rank 9 in 2019 from Rank 10 in 2018	West Bengal: Improved to Rank 9 in 2019 from Rank 11 in 2015
		Jharkhand		
South	Andhra Pradesh: Rank 1	West Bengal		
		Andhra Pradesh	Tamil Nadu: Improved to Rank 14 in 2019 from Rank 15 in 2018	Telangana: Improved to Rank 3 in 2019 from Rank 13 in 2015
UT	Delhi: Rank 12	Telangana		
		Delhi	Lakshadweep: Improved to Rank 15 in 2019 from Rank 31 in 2018	Lakshadweep: Improved to Rank 15 in 2019 from Rank 33 in 2015
North Eastern	Assam: Rank 20	Daman and Diu	Delhi: Improved to Rank 12 in 2019 from Rank 23 in 2018	Daman and Diu: Improved to Rank 18 in 2019 from Rank 33 in 2015
		Assam	Mizoram: Improved to Rank 25 in 2019 from Rank 30 in 2018	Manipur: Improved to Rank 29 in 2019 from Rank 33 in 2015
		Tripura	Arunachal Pradesh: Improved to Rank 29 in 2019 from Rank 34 in 2018	Mizoram: Improved to Rank 25 in 2019 from Rank 28 in 2015 Arunachal Pradesh: Improved to Rank 29 in 2019 from Rank 32 in 2015

Performers

Region	Best Performers in 2019	Consistently ranked best in last 4 rankings	Most improved in 2019 (Rank)	Top improvers since 2015 (Rank)
North	Uttar Pradesh: Rank 2	Rajasthan	Uttar Pradesh: Improved to Rank 2 in 2019 from Rank 12 in 2018	Himachal Pradesh: Improved to Rank 7 in 2019 from Rank 17 in 2015
		Uttar Pradesh	Himachal Pradesh: Improved to Rank 7 in 2019 from Rank 16 in 2018	Uttarakhand: Improved to Rank 11 in 2019 from Rank 23 in 2015
West	Madhya Pradesh: Rank 4	Gujarat	Madhya Pradesh: Improved to Rank 4 in 2019 from Rank 7 in 2018	Madhya Pradesh: Improved to Rank 4 in 2019 from Rank 5 in 2015
		Chhattisgarh		
East	Jharkhand: Rank 5	Jharkhand	West Bengal: Improved to Rank 9 in 2019 from Rank 10 in 2018	West Bengal: Improved to Rank 9 in 2019 from Rank 11 in 2015
		West Bengal		
South	Andhra Pradesh: Rank 1	Andhra Pradesh	Tamil Nadu: Improved to Rank 14 in 2019 from Rank 15 in 2018	Telangana: Improved to Rank 3 in 2019 from Rank 13 in 2015
		Telangana		
UT	Delhi: Rank 12	Delhi	Lakshadweep: Improved to Rank 15 in 2019 from Rank 34 in 2018	Lakshadweep: Improved to Rank 15 in 2019 from Rank 33 in 2015
		Daman and Diu	Delhi: Improved to Rank 12 in 2019 from Rank 23 in 2018	Daman and Diu: Improved to Rank 18 in 2019 from Rank 33 in 2015
North Eastern	Assam: Rank 20	Assam Tripura	Mizoram: Improved to Rank 25 in 2019 from Rank 30 in 2018	Manipur: Improved to Rank 29 in 2019 from Rank 33 in 2015
			Arunachal Pradesh: Improved to Rank 29 in 2019 from Rank 34 in 2018	Mizoram: Improved to Rank 25 in 2019 from Rank 28 in 2015 Arunachal Pradesh: Improved to Rank 29 in 2019 from Rank 32 in 2015

11. Start-Up Village Entrepreneurship Programme an Overview:

- Start-Up Village Entrepreneurship Programme (SVEP) is implemented by Deendayal Antyodaya Yojana.
- It is a sub-scheme of National Rural Livelihoods Mission (NRLM) of the Ministry of Rural Development and is being implemented since 2016.
- The main objective of the scheme is to support the rural poor from poverty by helping them set up enterprises and stabilizing them.
- SVEP provides self-employment opportunities with financial assistance, training in business management and soft skills while creating local community cadres for the promotion of the business.
- The three major pillars of rural startups under SVEP are finances, incubation and skill ecosystems.
- The major area is to develop a pool of community resource persons who are local and support entrepreneurs setting-up rural enterprises - enterprise promotion (CRP-EP).
- The Block Resource Centre (BRC) in SEVP blocks will monitor and manage the community resource persons, appraise SVEP loan application, acts as the repository of enterprise related information and plays the role to support sustainable revenue model to operate effectively and independently.
- The SVEP has extended business support services and capital infusion to 153 blocks of 23 states.
- As of 2020, Community Resource Person- Enterprise Promotion (CRP-EP) trained 2000 cadre and provided services to rural entrepreneurs and supported 100,000 enterprises.
- A mid-term review was conducted in September 2019 by Quality Council of India shows about 82% of the sampled entrepreneurs across the blocks from SC, ST and OBC categories.
- This signifies the social inclusion which is one of the pillars of NRLM.
- In the manufacturing area, 75% of the enterprises were owned and managed by women and average monthly revenue of enterprises was Rs 39,000-Rs 47,000, in service area Rs 41,700 and in case of trading Rs 36,000.
- The study shows that 57% of the total household income of entrepreneurs is through SVEP enterprises.

- SVEP promotes majorly group and individual enterprises. It promotes enterprises majorly on manufacturing, service and trading sectors.
- The CRP-EP provides the business support services to the entrepreneurs and is certified.
- To create standard E-learning modules for minimizing the transmission loss in technical aspects, investments are made on SVEP on use of ICT.

Impact of Covid-19 Pandemic:

- During the COVID-19 pandemic, women SHGs of DAY-NRLM stepped up as effective frontline responders.
- Around 318,413 SHG members are involved in the manufacturing of face masks, protective kits and sanitizing products as on 14 August 2020.
- In 29 states, women SHG members produced around 23.07 crore face masks, 1.02 lakh litres of hand wash and 4.79 litres of sanitizer with an estimated business turnover of Rs. 903 crore.
- During the lockdown, the rural women made an additional income of Rs 29,000 each.
- The most successful product during the lockdown is the face masks involving 2.96 lakh SHG members generating 23.07 crore masks in 150 days.
- The estimated business volume is about Rs. 375 crore.
- Some women SHGs involved in running community kitchens, serving cooked meals to 5.72 crore vulnerable community members.

12. New Development Finance Institutions (DFI):

- To fill the gap in long-term finance in the infrastructure sector, the government is setting up new Development Finance Institutions (DFI).
- The new DFI will be used to finance both social and economic infrastructure projects which are identified by the National Infrastructure Pipeline (NIP).
- The government panel on DFI had discussed two options which are whether it should be promoted by the government or given a private sector character with the government restricting its holding up to 49%.
- On August 10, the Finance Minister has inaugurated a NIP dashboard which provides details on investment opportunities.
- The total investments of the projects is of Rs. 111 lakh crore across the road, railways, energy and urban sectors for five years 2020-25.
- The advantages if the DFI is fully held by the government is the fund raising.
- The securities from the DFI would be made Statutory Liquidity Ratio (SLR) eligible which means, as per RBI rules, banks must set aside 18% of their net demands and time liabilities.
- This will benefit the banks to subscribe to the securities issued by the DFI.
- The disadvantage is that the senior management may be hounded by the investigating agencies like Central Bureau of Investigation (CBI) and subjected to the scrutiny of the Comptroller and Auditor General (CAG) and the Central Vigilance Commission (CVC).
- If DFI has a private sector character the government should believe and trust the private sector.
- Also, the risk appetite of the private sector will be more with minority government stake.

The Need for a DFI:

- According to experts, there is a huge funding gap in financing long-term infrastructure projects.
- DFIs such as ICICI, IDBI, IFCI, and IRBI have been either transformed into something else or have faded away.
- Individually, banks have less capacity to finance long-term infra projects and thus the need for a DFI.

- For India to grow continuously at 8-10 per cent, the credit growth of the country must be at 12-14 percent.

13. Online Schooling During Covid-19 - Disparities Among Communities Observed:

- The National Statistical Organisation (NSO) survey shows stark digital divide across States, cities, villages and income groups.
- The survey was part of the NSO's 75th round conducted from July 2017 to June 2018 on household social consumption related to education.
- The NSO marks by dividing the population into five groups or quintiles, based on their usual monthly per capita expenditure.
- Schools across the country have been closed for six months due to Covid-19.
- Across India, a quarter of all homes have internet facilities accessed via a mobile or fixed network using any device which includes smartphones.
- Most of the homes are located in cities and only 42% have access to the internet.
- In rural India, only 15% are connected to the internet.
- The NSO report shows 20% of Indians above the age of 5 years had basic digital literacy and the age group of 15 to 29 years shows just 40% which includes high school and college students as well as young parents.

Internet Access:

- The national capital has the highest internet access with 55% having access to the internet.
- Himachal Pradesh and Kerala are only states which have more than half of all the households having access to the internet.
- In Urban Himachal Pradesh the internet penetration is higher the 70%, which means online schooling, digital textbooks and zoom classes are accessible by many children.
- In rural Odisha, internet penetration is less than 6%.
- There are 10 other states which have 10% of internet access which includes software hubs such as Tamil Nadu and Karnataka.
- Kerala has the least inequality with 39% of the poorest rural homes have internet when compared with 67% of the richest urban homes.
- The State-wise spilt of literacy rates shows Andhra Pradesh has the country's lowest literacy rates with 66.4%, Chhattisgarh 77.3%, Jharkhand 74.3%, Uttar Pradesh 73%, and Bihar 70.9%.
- Kerala is on the top with 96.2% followed by Delhi 88.7%, Uttarakhand 87.6% and Himachal Pradesh 86.8%.

Digital Divide:

- The NSO survey shows a glaring gap in access to internet among urban and rural India.
- As per the survey, 76% of households in the country with at least one student is from rural India.
- But, access to computer and internet is disproportionately low in rural India compared to urban India.
- While access to a computer is 7.8% in rural India, it is 39.4% in urban India. Similarly, access to internet is 19.3% in rural India compared to 58% in urban India.
- With such a huge gap between rural and urban areas, students from rural areas lost out to urban students during the COVID-19 pandemic. Online education is a distant dream for many students in rural India. This increases inequality in the country.
- When one digs deeper, within rural India, access to computer and internet is restricted to rich communities. The gap widens further.
- The most affected students are from Dalit and Adivasi communities.

- **The COVID-19 pandemic has wreaked havoc across the economy.** Education, a crucial factor in social mobility is hit hard by the pandemic. Schools, colleges and government has taken the digital path to provide education, ignoring the fact that digital access is limited in the country. The cost of this miscalculation is children from downtrodden sections of the society are losing the chance to move themselves up the social order. For the country as a whole, this will further increase inequality.

14. NSO Report on Vaccination:

- The **National Statistical Organisation (NSO)** report released ‘Health in India ’report.
- According to the report, children in India are vaccinated against tuberculosis and receive their birth dose of polio vaccine.
- But, two out five children do not complete their immunisation programme.
- In the national capital, only less than half of the children received all eight vaccines.
- The NSO report is based on the 75th round of National Sample Survey from July 2017- 2018 on household social consumption related to health.
- The NSO report shows that only 59.2% of children under five years are fully immunised.

Doses of Vaccine:

- Children in our country receive eight doses of vaccines in the first year of life to immunise them against eight diseases.
- Across the country, 97% of the children received only one vaccine which is BCG or the first dose of OPV at birth.
- Children protected against measles is only 67%, polio booster dose 58%, DPT booster dose 54%.
- The highest immunisation across the states are Manipur- 75%, Andhra Pradesh- 73.6%, Mizoram - 73.4%.
- The low rate of immunisation states are Nagaland- 12%, Puducherry 34%, Tripura 39.6%.

14.1. Universal Immunisation Programme:

- Launched in the year 1985, Universal Immunisation Programme (UIP) is a vaccination program.
- Under the programme, children are vaccinated against 12 diseases - tuberculosis, measles, diphtheria, polio, tetanus, hepatitis B, Japanese encephalitis, rubella, diarrhoea, pneumonia, meningitis, pneumococcal pneumonia, and whooping cough.

15. Indo-Pacific Co-operation-Coming Together of India, Australia and France:

- The first India-France-Australia trilateral dialogue was held on August 9, 2020.
- The top focus was on Indo-Pacific cooperation with a signal to China.
- During the meeting, the maritime security and maintaining resilient global supply chains was discussed along with the economic and geo-strategic challenges and cooperation.
- The meeting was co-chaired by the Foreign Secretaries of three countries.
- India’s key partners in the Indo-Pacific region are France and Australia.
- The Foreign Secretary of India shared Prime Minister Narendra Modi’s vision for the Indo-Pacific which was articulated at the Shangri-La Dialogue in Singapore in 2018.
- This is a means to promote the concept of Security and Growth of All in the Region - SAGAR.
- During the meeting, the Foreign Ministers discussed the emerging challenges in the context of Covid-19 and the financial impact of the pandemic on the Indian Ocean region.
- They also discussed the increased salience of resilient, reliable supply chains, cooperation in the areas of humanitarian assistance and disaster relief, maritime domain awareness, mutual logistics support, capacity building of friendly countries in the region.

- The agenda of the meeting was the co-operation on maritime global commons, includes marine biodiversity, blue economy and environmental challenges such as marine pollution.
- The area of interest from the Indian side is collaborating on sustainable fisheries in the Indian Ocean, technologies for the harvesting of Deep Ocean Resources, and Ocean Thermal Energy Conversion.
- India focused on scaling up the capacities in the health sectors and the Atmanirbhar Bharat initiative.
- The trio focused on therapeutic and vaccine development, international solar alliance, coalition for disaster resilient infrastructure and the need for a reformed multilateralism.
- The three sides agreed to hold the dialogue on an annual basis.

Role of India in the Indo Pacific Region:

- India has been one of the major players in the region and conducts naval exercises with the United States, Japan, Korea, Vietnam and ASEAN countries.
- India issued a strategic vision for the Indian Ocean and the Pacific in maintaining security in the South China Sea.
- India considers the Indo-Pacific region as an inclusive, integrated, and balanced space.
- The strategy India is adopting in the Indo-Pacific region is riling China.
- The strategic partnerships India is building in the region is being perceived by China as a direct threat to its claims in the region.
- China claims the entire South China Sea as its own territory.
- It has disputes with all the littoral countries of the South China Sea. It even occupied Spartly Islands in the South China Sea and converted it into a military base.
- India, with its naval power and good economic relations with the ASEAN countries is being considered as a counter weight to a growing China in the region. It is why countries like the US, Japan, Australia and recently Germany are looking towards India for playing a major role in the Indo-Pacific region.

16. Living Planet Report 2020:

- The **WWF** released a **Living Planet Report** 2020 which has found that the world's wildlife population is down by 68% between 1970-2016.
- During this period, the report found that 75% of the Earth's ice free land has been altered, oceans are polluted and more than 85% of the wetlands have been polluted.
- The important direct driver of biodiversity loss has been the use of land change primarily the pristine habits into agricultural systems and oceans have been overfished.
- The highest biodiversity loss due to land-use change globally has been in Europe and Central Asia at 57.9%, in North America 52.5%, Latin America and Caribbean at 51.2%, Africa at 45.9% and Asia at 43%.
- The major factors leading to biodiversity loss include overexploitation of the species, overfishing, invasive species and diseases, pollution and climate change.
- According to the Living Planet Index, based on which the report is made, the largest wildlife population loss has been in Latin America at an alarming rate of 94%.
- Living Planet Index is an indicator of trends in vertebrate species populations of the world. The index is managed by the Zoological Society of London (ZSL) in association with WWF.
- According to the report, the most threatened biodiversity globally has been the freshwater biodiversity.
- Global mapping has recently revealed that about 90% of global wetlands have been lost since 1700.
- According to the IUCN Red List, India with over 45,000 species of plants is only 2.4% of the world's land area has lost six plant species to extinction.

India Scenario:

- India lost nearly one-third of its natural wetlands to urbanization, agricultural expansion and pollution.
- The WWF India report on Water Stewardship for Industries revealed that 14 out of 20 river basins are water-stressed and will be having extreme water scarcity by 2050.
- The report indicates that the human relationship with biodiversity and nature are unravelling.
- The WWF has been releasing the Living Planet Report every two years since 1998.

Changes Suggested:

- The 2020 report had suggested some systemic changes to reverse biodiversity loss and stabilise the planet.
- These include stopping the destruction of wildlife populations, a complete overhaul of our agriculture systems and industrial processes, removing deforestation from the global supply chain and making trade more sustainable.
- The report raises an alarm and calls for immediate action by world nations. Each animal has a role to play in an ecosystem. The extinction of an animal leads to the collapse of the ecosystem and loss of services that the ecosystem offers to human beings. But, the mindless destruction of pristine forest lands by human beings is bringing the biodiversity of the planet to a brink. Unless action to curtail the species loss is taken now, the damage to our planet will be irreversible.

17. National Security Clause in Defence Manufacturing Policy:

- The Union Cabinet approved a new policy proposed by the Ministry of Commerce and Industry.
- The new policy puts national security clause as a condition raising the cap of foreign direct investment through automatic approval in the defence sector from 49 per cent to 74 per cent.
- The clause suggests that any foreign investment in the defence sector shall be subject to scrutiny on the ground of national security.
- The government reserves the right to review any foreign investment in the defence sector.
- The national security clause is in addition to the existing four conditions specific to FDI in the defence manufacturing sector.
- This includes security clearance and some guidelines to the Ministry of defence.
- To boost manufacturing in the country, the government is focusing on the defence sector aiming to achieve a turnover of Rs. 1.75 lakh crore and exports worth Rs. 35,000 crore by 2025.
- In 2019, the Indian defence sector produced equipment worth Rs. 80,000 crore. Of this, Rs. 63,000 crore worth production was from Public Sector Undertakings (PSUs).
- By the liberalized FDI policy, the government wants foreign original equipment manufacturers to shift operations to India. Also, the government wants the Indian private sector to play a major role in defence production.
- The Finance Minister announced the raise of the FDI cap in the defence sector through the automatic route to 74% and mentioned the slew of other measures for the sectors.

Conclusion:

- Under the Atmanirbhar Bharat Abhiyan, the Union government is pushing for 'Make in India' defence projects. The raising of the investment cap to 74% must be seen in this light. But, the national security clause might dampen the spirits of foreign investors, as it may lead to unwanted government intrusion. It is to be seen how private investors will take the clause.

18. Hike in Poll Campaign Expenditure Cap:

- The Election Commission (EC) proposed a 10 per cent increase in the election poll campaigns.
- The Law Ministry received a proposal from the EC on amending Rule 90 of the Conduct of Election Rules 1961 to raise the poll expenditure cap ahead of the Assembly elections in Bihar.

- For the state polls in Bihar, the current ceiling is Rs. 28 lakhs and will increase to Rs 30.8 lakh once the proposal is accepted.
- The last hike in the poll expenditure cap was before 2014 Lok Sabha elections.
- The EC proposed the new hike in the poll campaign due to Covid-19 pandemic.
- Amidst the pandemic, the EC issued a special set of guidelines for campaigning.
- The current expenditure limit for State and Parliament elections differs and a candidate can spend between Rs 50 lakh and Rs 70 Lakh depending on the state they are contesting from.

19. India and Japan Sign Logistics Agreement:

- Recently, India and Japan sign agreement on Reciprocal Provision of Supplies and Services between armed forces.
- The agreement is a reciprocal provision of supplies and services between the armed forces of India and Japan.
- This agreement establishes a framework for closer cooperation between the armed forces of India and Japan.
- Both the forces will be engaged in bilateral training activities, United Nations Peace Keeping Operations, Mutual agreed activities and Humanitarian International Relief.
- This agreement enhances the interoperability between the two forces. It increases the bilateral defence engagements under the Special Strategic and Global Partnership.
- Both countries can coordinate on medical requirements, supplies, communications, airlifting and maintenance.
- The agreement is mainly aimed at maritime cooperation and can upgrade India-Japan naval exercises.

Need for Such an Agreement:

- The Indo-Pacific region is heating up due to the unilateral actions of China in the region.
- Japan, which is being threatened by a growing China, needs support from countries like India to curtail Chinese actions in the region. Japan has territorial disputes with China.
- On its part, India is seeing itself as a counter to the Chinese aggression in the region.
- India seeks a free and open Indo-Pacific region where rule of law persists and international agreements are honoured.
- For India's navy to operate freely in the Indo-Pacific region and send missions regularly, India needs logistics support and the agreement with Japan will fulfil that.
- Already, India has signed such agreements with the USA and South Korea. The country is in the process of signing such agreements with Russia, Vietnam, the United Kingdom and Australia in the near future.

Significance of the Agreement with Japan:

- With the agreement, the defence sector cooperation between India and Japan will strengthen.
- Japan already considers India as an economic partner and with the agreement, both countries will become military allies.
- Both countries can now regularly conduct military exercises and be battle-ready when the need comes.
- The agreement is also a signal to China that it can no longer unilaterally alter the course in the Indo-Pacific region.

20. Matsya Sampada Yojana and e-Gopala App Launched:

- Prime Minister Shri Narendra Modi launched the PM Matsya Sampada Yojana, e-Gopala App and several other initiatives linked to Bihar.
- The other initiatives are linked to study and research in fisheries production, animal husbandry, dairy and agriculture.
- The main aim of these schemes is to empower villages and make India self-reliant.

20.1. Matsya Sampada Yojana:

- The Matsya Sampada Yojana is being launched in 21 states with an investment of Rs. 20,000 crores and would be spent in the next 4-5 years.
- On September 10, 2020 projects worth Rs. 1700 are launched.
- Many facilities have been inaugurated in Purnia, Patna, Sitamarhi, Kishanganj, Madhepura and Samastipur.
- The new scheme provides new infrastructure, access to new markets, modern equipment and increases opportunities for farming.
- This scheme paves way for blue, white and sweet revolutions by boosting fish, milk and honey productions.
- A separate Ministry has been created in the Government of India which will facilitate fishermen and colleagues related to fish farming and sale.
- The main aim is to double fish exports in the next 3-4 years.
- Fish farming depends on the availability of clear water. So the fisheries sector will benefit from Mission Clean Ganga, river transport in the areas around the Ganga River and Mission Dolphin.

e-Gopala App:

- The e-Gopala app is an online digital medium which will help the farmers to get better quality livestock and free from middlemen.
- The app provides information related to cattle care, farm productivity, health and diet.
- To give all the information about the animal, the aadhaar number of the animal will be inserted in the e-Gopala app. This will help the cattle owners to buy and sell their cattle.
- A free vaccination campaign is launched, to vaccinate more than 50 crore livestock from the foot and mouth disease and brucellosis.
- A county-wide artificial insemination program was started, Mission Gokul.
- Bihar is strengthening its dairy sector under National Gokul Mission.
- The largest center in India is being built in Purnia. This center will give a boost to the development and conservation of breeds of Bihar like 'Bachhaur' and 'Red Purnia'.

20.2. Study and Research Centers:

- Bihar is an important centre for study and research related to agriculture.
- The Mahatma Gandhi Research Centre was inaugurated in Bihar to save farming from floods.
- Many institutions were started to connect agriculture with science and technology like the Regional Research and Training Center for fish in Motipur, the Animal Husbandry and Dairy Development Center at Motihari.
- The Central Government has set up a Rs 1 Lakh Crore Agriculture Infrastructure Development Fund.

21. 5-Point Action Plan to Ease Tensions:

- India and China agreed on a five-point course of action to reduce tensions along the Line of Actual Control (LAC).
- The two Foreign Ministers agreed that the border troops of both the sides should continue their dialogues, disengage and maintain proper distance and reduce the tensions.

- Both the sides also issued separate notes detailing their positions and differences for the first time in 45 years.
- The main task is to ensure the disengagement of the troops in all the friction areas.
- However, this action depends on the militaries following through on the ground and returning from the near-eye to eye confrontation at the LAC and to their normal posts which are 25 -30 km apart.

The Action Plan:

- Should not allow differences to become disputes.
- Disengaging to ease the tensions.
- Continuing the existing India-China protocols.
- To avoid escalatory actions.
- To continue a dialogue between the Special Representatives and other mechanisms and working towards new confidence-building measures (CBMs).

21.1. Stand-Off between India and China:

- Timeline for the stand-off between India and China along the Line of Actual Control (LAC) in Ladakh
- May 5 - Several soldiers were injured after a shuffle when Chinese mobilized on the North Bank of Pangong Tso.
- May 5-15 - Clashes with Army reported at Pangong, Galwan, Depsang, Sikkim and other points on LAC.
- June 6 - Meeting held by Corps Commanders agreeing on disengagement plans. Four rounds held.
- June 15 - Clashes at the Galwan Valley, 20 Indian soldiers killed and no words of Chinese casualties.
- June 19 - PM holds all-party meet and said no one has transgressed Indian borders.
- July 5 - Both the sides agreed to expedite disengagement process but troop build-up continues.
- June-August - Four meetings held on the Working Mechanism for Consultation and Coordination (WMCC) on India-China border affairs.
- August 29/30 - Indian troops dominated the peaks and clashes on the South bank of Pangong.
- September 4 - India-China Defence Ministers meet in Moscow.
- September 7 - Tensions escalated and PLA fired gunshots.

21.2. What is the Line of Actual Control?

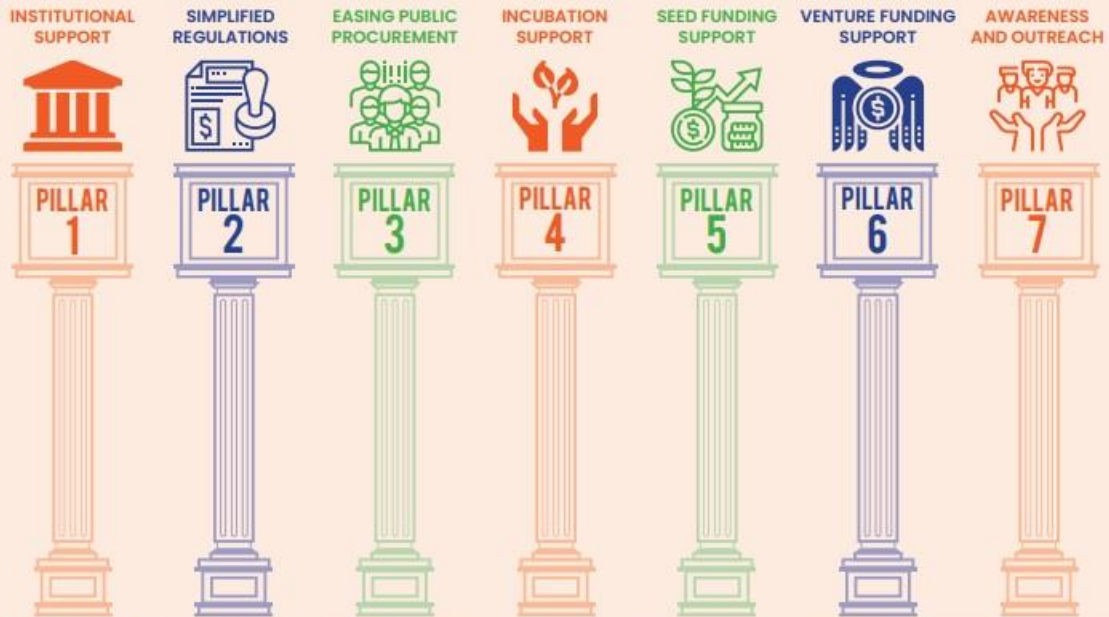
- The LAC is the demarcation that separates Indian-controlled territory from Chinese-controlled territory.
- It is divided into three sectors: the eastern sector which spans Arunachal Pradesh and Sikkim, the middle sector in Uttarakhand and Himachal Pradesh, and the western sector in Ladakh.
- India considers the LAC to be 3,488 km long, while the Chinese consider it to be only around 2,000 km.

22. States Ranking on Support to Startup Ecosystem:

- For the year 2019, the results for states ranking on Support to Startup Ecosystems were released by Minister of Commerce and Industry and Railways.
- The second edition of the States Startup Ranking Exercise was conducted by the Department for Promotion of Industry and Internal Trade (DPIIT).
- The key objective is to foster competitiveness and propel States and Union Territories to work actively towards uplifting the startup ecosystems.
- This has been implemented as a capacity development exercise.

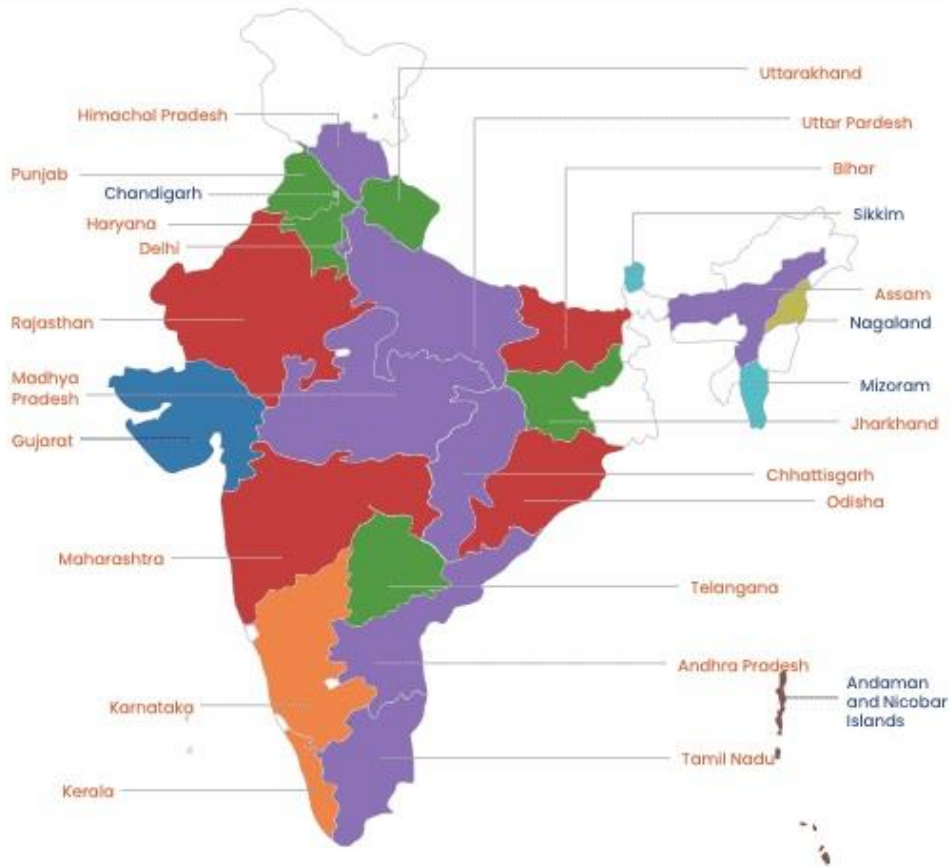
- This encourages mutual learning among the states and to provide support in policy formulation and implementation.
- The Startup Ranking Framework 2019 has 7 broad reform areas and 30 action points.
- This includes Industrial Support, Easing Compliances, Relaxation in Public Procurement Norms, Seeding Funding Support, Incubation Support, Venture Funding Support and Awareness and Outreach.
- States and UT were divided into two groups, to establish uniformity and standardization in the ranking.
- In Category Y, all UTs except Delhi and all the northeast states except Assam are placed.
- In Category X, all other States and UT Delhi are placed.
- In the exercise 22 States and 3 Union Territories participated.
- Feedback was gathered through more than 60,000 calls made in 11 different languages.
- States are classified into 5 categories- Best Performers, Top Performers, Leaders, Aspiring Leaders and Emerging Start-up Ecosystem.
- A National Report was released which highlights the vision, trajectory, methodology and the future roadmap of the State Ranking Exercise.
- A State Specific Report for each of the 25 participating entities has been released.
- In supporting startups 'A Compendium of Good Practices 'adopted by various states has been released.
- To identify and implement newer initiatives 166 good practices have been identified.
- The reports showed that India became the third largest ecosystem in the world.
- The startup creation in the country led to creation of the 4 lakh jobs.

7 PILLARS SUPPORTING THE STARTUP ECOSYSTEM



- 1. Institutional support** – It covers states' best practices to develop a startup ecosystem that includes availability of a startup policy, nodal department, mentors and partnerships in a state
- 2. Simplified regulations** – It covers states' support in simplifying the regulatory regime for startups and building a strong business compliance mechanism
- 3. Easing public procurement** – It includes states' initiatives in relaxing public procurement guidelines for startups
- 4. Incubation support** – It includes states' initiatives in setting up incubators, allocation of seats and providing acceleration support to startups
- 5. Seed funding support** – It covers states' initiative in formulating seed funding guidelines and making an online system available for managing seed funding for startups
- 6. Venture funding support** – It includes states' support in setting up venture funds or fund of funds
- 7. Awareness and Outreach** – It covers states' efforts taken in creating awareness through various measures such as conducting bootcamps and hackathons for startups

States Startup Ranking Results 2019



23. Logistics Agreements with Three Other Countries On The Cards:

- After the logistics agreement with Japan, India is working on three logistics agreements with Russia, the UK and Vietnam.
- The logistics agreement with Russia is to be expected to be signed in October this year.
- Now, India has military logistics agreements with the US, Japan, Australia - the Quad countries.
- This significantly improves the interoperability as the partner countries operate on common military platforms.
- The agreements between Vietnam and the UK are under discussion.
- The Reciprocal Logistics Support (RLS), an agreement between India and Russia is expected during the bilateral summit in mid-October.

- With an agreement with Russia, India gains access to defence facilities of Russia in the Arctic Region.
- The Arctic region is seen as a new global activity as new shipping routes open up and resources become available.
- In the Russian Far East, India has announced its investments.
- The agreement utility will be visible at the Malabar Trilateral Naval Exercise to be held in November.
- In June, **India and Australia signed the Mutual Logistics Support (MLSA)**.
- This elevated the partnership between the two countries to a Comprehensive Strategic Partnership and a joint declaration on maritime cooperation in the Indo-Pacific region was announced.
- The Reciprocal Provision of Supplies and Services between the armed forces of Indian and Japan was signed recently for deeper cooperation between the Indian navy and the Japan Maritime Self-Defence Force (JMSDF).
- In 2016, India signed a Logistics Exchange Memorandum of Understanding (LEMOA) with the US.
- India's maritime interactions with the Quad countries increased on a bilateral basis.
- This is centred on information sharing for Maritime Domain Awareness (MDA) in the Indian Ocean and Indo-Pacific region.
- India got access to encrypted communication systems for seamless communications after it signed the foundational agreement Communications Compatibility and Security Agreement (COMCASA) with the US.
- In March 2019, the Indian Navy and the US signed a loan agreement and installed two Pacific fleets provided by the Combined Enterprise Regional Information Exchange System (CENTRIXS) kits at the Navy Headquarters.

24. Indian Brain Templates Developed:

- A team of Neuroscientists from NIMHANS developed Indian Brain Templates and a brain atlas.
- Neurologists, neurosurgeons and psychiatrists can map the brain structure of the patients and make an accurate assessment using the templates and the atlas.
- The neuroscientists studied 500 brain scans of Indian patients.
- They developed five sets of templates and brain atlas for five age groups covering late childhood to late adulthood (6 to 60 years).
- The currently used template is The Montreal Neurological Index (MNI) template based on Caucasian brains.

24.1. Montreal Neurological Index (MNI):

- The MNI template was made by averaging 152 healthy brain scans from a small slice of the population of North America.
- Countries have their scale of measures, but India depends on the Caucasian brain template.
- The newly developed template measures the Indian brain.
- The templates and atlas will provide precise reference maps for areas of interest in patients with neurological disorders like brain tumours, strokes and dementia.
- This will help to pool information useful for group studies of the human brain and psychological functions and aiding in the understanding of psychiatric illnesses like autism, attention deficit hyperactivity disorder, mood disorders, substance dependence and schizophrenia.
- The new population and age-specific Indian brain templates will allow reliable tracking of brain development and age tracking.
- Paediatricians can monitor the child's height or weight with the help of the templates.

- Using the NIMHANS IBTs for Indian brains significantly improved the accuracy of alignment and reducing distortions, errors or biases in final reports of brain structure and function.
- The product is freely available for clinicians and researchers across India and the world.
- Significance of the Development
- In a study conducted in 2018, a significant difference was noted in Indian brain features in comparison with Chinese and MNI brains.
- This led to the current development of Indian Brain Templates (IBTs) for accurate clinical diagnosis of diseases and issues with Indian brains.
- Earlier, as neurologists and psychiatrists of the country have been following MNI brain templates, the chance of misdiagnosing a brain condition was significantly higher.
- Now, NIMHANS IBTs can be used across the country for an accurate diagnosis.
- The IBTs set a standard protocol for brain imaging in India.

24.2. National Institute for Mental Health and Neurosciences:

- The National Institute for Mental Health and Neurosciences (NIMHANS) is India's premier institute for mental health and neurological studies.
- Located in Bangalore, Karnataka, NIMHANS is an Institute of National Importance.
- The institute functions autonomously under the Ministry of Health and Family Welfare.
- In the National Institutional Ranking Framework (NIRF) 2020, NIMHANS stood at 4th place.

25. All About the Scramjet Engine Technology:

- The Defence Research and Development Organisation (DRDO) launched a cruise vehicle at a hypersonic speed of Mach 6 for 20 seconds.
- The DRDO named it as Hypersonic Technology Demonstrator Vehicle (HSTDV).
- The centrepiece of the HSTDV was the scramjet engine formed by the HSTDV's propulsion system.
- The critical technologies developed for the HSTDV were the scramjet engine, ethylene fuel, generation of maximum energy from the engine, development of materials to take care of high temperatures that occur due to air friction on the edges of the cruiser wings, tail surface and nose tip and controlling the vehicle with minimum drag and maximum thrust.
- The engine is called as supersonic combustion ramjet or scramjet because the air in the chamber mixes up with fuel to ignite supersonic combustion. The cruiser's flight will be at a hypersonic speed of Mach 6 or 7.
- Agni I Missile carried the vehicle HSTDV from a launchpad in Odisha.
- The Agni I climbed to a height of 30km in 12 seconds at speed of Mach 5.6.
- When the launch vehicle reached 30km height, the scramjet engine opened just before the launch vehicle separated.
- The cruise vehicle's nose cone split in two and fell off at an altitude of 30km.
- All the technologies were developed indigenously by the DRDO in Hyderabad, DRDL, the Research Centre (RCI) Imarat and the Advanced Systems Laboratory (ASL).
- The Scramjet engine technology of air-breathing will lead to the development of hypersonic missiles, faster civilian air transportation and facilities of putting satellites into orbits at low cost.

Mode of Operation:

- The atmospheric air rams into the scramjet engine's combustion chamber at a supersonic speed.
- The air is mixed with fuel, then the fuel is ignited and the scramjet engine revved into action.
- The HSTDV cruise vehicle flew for the next 20 sec at a hypersonic speed of Mach 6 and fell 40km away in the Bay of Bengal.
- The fuel is ignited in milliseconds and ignition sustained for the duration set for the flight and controlled with maximum thrust.

26. Kolar Gold Fields in Karnataka after 16 years:

- The mining operations on the fields were stopped by the Union Government on February 28, 2001 because of environmental and economic reasons. Also, the productions were not justifying the investments.
- The Kolar Gold mine fields are located some 100 km from Bengaluru. These mines were closed on February 28, 2001 after the gold prices fell down
- The Kolar Gold mines were nationalised in 1956.
- China is top gold producing nation that accounts for 11% of global mine production. It produces some 420 million tonnes of gold annually.
- Australia with the production capacity of 330 million tonnes (MT) stands at second position. Russia took lead over Australia recently.
- Russia is the third largest producer having capacity of 310 million tonnes. 83 percent of European gold comes from Russia.
- As per the World Gold Council, India has 10th largest gold reserves in the world with capacity of 600 tonnes.
- Karnataka is the largest producer of gold in India.
- Kolar gold mines in Karnataka is one among the deepest mines of the world. Second largest producer of gold is Andhra Pradesh. Ramagiri, Anantpur of Andhra Pradesh is an important gold field.

27. China Indulging in Hybrid Warfare:

- The Zhenhua Data Information Technology Co of China is monitoring 10,000 Indian individuals and organisations across the country.
- Zhenhua is a pioneer in using big data for hybrid warfare and is a Shenzhen based Technology Company.
- It has links to the Chinese government and the Chinese communist party.
- The individuals that the company is targeting are from diverse fields - politics, business, judiciary, military, media and even crime accused.
- Indians being monitored across disciplines like judges, scientists, academicians, actors, sportspersons, journalists, religious figures and activists.
- It is even monitoring hundred people accused of financial crime, terrorism, corruption and smuggling of narcotics, wildlife, gold or arms.
- This gains significance at a time when China is locked in a simmering standoff with India along the Line of Actual Control (LAC).

27.1. Zhenhua Data:

- Zhenhua was registered as a company in 2018 April and set 20 processing centres across countries and regions.
- Zhenhua targets individuals and institutions which includes government, politics, business, technology, media and civil society.
- It is working with the Chinese military, security agencies and intelligence.
- Zhenhua maintains an information library and monitors the subject's digital footprints across social media.
- It builds a relationship database which records and describes the association between individuals, institutions and information.
- Zhenhua offers threat intelligence services.

- It watches 24/7 and collects personal information from social media accounts, keeps track of target's relationships and friends, analyzes the posts, comments and likes, even collects information about the geographic location through Artificial Intelligence.
- Zhenhua flaunts its role in hybrid warfare without any weapon.
- Zhenhua had log files called Overseas Key Information Database (OKIDB), using advanced language, targeting and classification tools, which included hundreds of entries without any explicit markers.
- Entries were from United States, United Kingdom, Australia, Germany, Canada and UAE. The source was connected to the company based in Shenzhen City in Guangdong province of South-East China.

27.2. Hybrid Warfare:

- Hybrid warfare is a shift in the arena of violence from military to politics, economic and technology.
- This started in 1999, unrestricted warfare by China's People's Liberation Army.
- The new weapons in this war were those closely linked to the lives of the common people and one day a quite few gentle and kind have begun to have offensive and lethal characteristics.
- The hybrid warfare is happening in every country- the Russian outbreak in 2014-15, the annexation of Crimea and undeclared conflict in Eastern Ukraine and the Hong Kong protest in 2019.

27.3. Hybrid Warfare Laws in India:

- Under the IT Act, 2000 and Information Technology Rules 2011 personal data means any information regarding a person either directly or indirectly in relation with other information available is capable of identifying the person.
- This does not include the information freely available or accessible in the public domain.
- The IT rules do not impose any conditions on the usage of data for direct marketing.
- When a third-party collects the data, the company is undertaking it without any consent and sharing it with a rival country is illegal.
- The privacy laws are impossible to enforce in a foreign jurisdiction.

Monitoring Concern:

- There is a distinct strategic imperative in the monitoring of Indian targets by Zhenhua.
- The range of targets includes the country's top brass of the military, political and scientific establishment figures and the scrutiny of the list confirms Zhenhua interests in their personnel.
- The targets in politics include President, Prime Minister, Congress interim President, Chief Ministers, Cabinet Ministers.
- The military list includes Chief of Defence Staff Bipin Rawat, 60 senior serving and retired officers from the military and 14 former Chiefs of three services. The Scientists who are been monitored are scientists at the Nuclear Power Corporation of India Ltd (NPCIL), the Atomic Energy Commission (AEC), the Atomic Energy Regulatory Board (AERB), the Atomic Minerals Directorate for Exploration and Research (AMD) and the Scientists from the Atomic Energy Commission to Indian Space Research Organisation.
- From the National Security Council Secretariat (NSCS) the list has four former diplomats.
- Among the top sleuths on the list are former RAW Chief, Former IB additional director, former deputy director general of Central Economic Intelligence Bureau.
- Several former defence personnel on the list are those who joined politics or assumed public offices after retirement.
- Former director generals of the Indo-Tibetan Border Police and the Indian Coast Guard.

- This network of institutions and organisations are key to the country's security and strategic interests.

28. Possible Sign of Alien Life on Venus:

- Scientists detected the gas called phosphine on Venus, which indicates microbes may inhabit the harshly acidic clouds of Venus.
- This indicates the sign of life beyond Earth.
- The researchers did not detect the actual life form but detected the gas phosphine.
- Phosphine is produced by bacteria thriving in an oxygen-starved environment.
- It is a phosphorus atom with 3 hydrogen atoms attached and is highly toxic to humans.
- The team spotted the phosphine using the James Clerk Maxwell Telescope in Hawaii.
- Then confirmed it using the Atacama Large Millimeter or submillimeter Array (ALMA) radio telescope in Chile.
- Phosphine was seen at 20 parts-per-billion as the trace of concentration in the Venusian atmosphere.
- **Phosphine** is less stable than water and could not withstand in the very high acidic atmosphere of Venus.
- But the volume of gas detected on the planet suggest that something is replenishing it in large quantities.
- Scientists thus believe that the Venusian high clouds with mild temperatures around 86 degree Fahrenheit could harbour aerial microbes and could endure extreme acidity.
- On Earth, to produce phosphine, bacteria take up phosphate from minerals, biological materials and add hydrogen.

28.1. Could Phosphine Occur Naturally?

- For three years, astronomers have thought about every possible way phosphine can be produced on Venus.
- From volcanoes to lightning and sunlight triggering the formation of phosphine, astronomers have thought about everything.
- But, nothing could have produced such large quantities of phosphine detached in the Venusian atmosphere.
- And now, though actual life has not been detected, astronomers have published the study with a question mark on the existence of life on Venus.

What if there Is Life On Venus?

- If at all phosphine is being produced by alien microbes, scientists suggest they could be entirely different from microbes that we see on Earth.
- This means, for finding life on other planets we should not consider the metabolism that we find on earth. We should look for different biochemistry to find life on such harsh environments.

28.2. The Venus:

- Venus is the Earth's closest planet and is the second planet of the Sun.
- The structure of Venus is similar to Earth, but slightly smaller.
- It is an inhospitable planet.
- Venus is wrapped with a toxic atmosphere and traps in heat.
- The surface temperature is 880 degrees Fahrenheit (471 degrees Celsius) which is enough to melt lead.

29. National Programme on DEW Weapons on the Anvil:

- The Defence Research and Development Organisation (DRDO) is planning a national programme on DEW weapons.
- Directed Energy Weapons (DEW) are like high-energy lasers and high-powered microwaves.
- These are being considered crucial around the world for contactless conflicts of the future.
- This programme will have short, medium and long term goals.
- The aim is to develop different DEW variants of up to 100 kilowatt power in collaboration with the domestic industry.
- The DRDO is still working on chemical-oxygen iodine and high-power fibre lasers to a secretive Kali particle-beam weapon for soft-kills against incoming missiles and aircrafts.
- The DRDO developed two anti-drone DEW systems which will be produced in large scale with the help on the industry.
- One anti-drone is a trailer-mounted DEW with a 10 kilowatt laser to engage aerial targets at 2km range and the other one is a compact tripod-mounted one with a 2 kilowatt laser for a 1km range.
- The two systems can bring down micro drones by either jamming their commands and control links or damaging their electronics through the laser-based DEW.
- These DEWs are extremely modest when compared with other countries' DEWs.

29.1. Directed Energy Weapons:

- DEWs are conventional weapons and use kinetic or chemical energy in missiles or other projectiles to destroy the targets.
- These are beams of concentrated electronic magnetic energy or subatomic particles to hit targets.
- The DEWs are high energy solid state lasers and high-power microwaves with a charged particle beam.
- The two major subsystems of DEWs are laser source and beam control system.
- To destroy an incoming missile, a laser weapon requires 500 kilowatts.

Operational Advantages:

- Accuracy at speed of light.
- Low cost per shot.
- Flexible compared to missiles.
- Engages multiple targets with rapid re-targeting.
- Minimal collateral damage.
- DEW Status
- Countries like the US, Russia, China, Germany and Israel developed DEWs to destroy drones, boats and vehicles.
- Deadly long range weapons with high power lasers are still being developed.
- Lasers can be used in everyday life from printers, barcodes, etc.
- Lasers are present in industry and medicine sectors.

30. Business Rankings of the States:

- The Department for Promotion of Industry and Internal Trading (DPIIT) released the business rankings for the Indian States.
- The Industrial States such as Tamil Nadu and Maharashtra were absent on the top and Uttar Pradesh was on the top.

Process of Ranking:

- DPIIT's exercise aims to provide a business-friendly environment.
- The DPIIT devised a methodology to rank the states according to the ease of doing business (EoDB) in a state.

- DPIIT provides a Business Reform Action Plan (BRAP). This provides a set of recommendations that reduces the time and effort spent by businesses on compliance with regulations.
- To simplify, rationalise and digitize the regulatory framework, the BRAP 2019 had an 80-point list of reforms recommendations.
- The reforms are grouped into 12 broad areas which include labour regulation, land administration, Electricity and water supply permits, environmental regulations etc.
- States are required to submit proof of implementing each reform on the DPIIT's EoDB portal and should submit the list of users.
- The users are surveyed to determine the efficacy of these reforms and each question is assigned a weight.
- The final score is the average weight of all the responses applicable to the state.

30.1. DPIIT Reforms:

- DPIIT recommends having a single-window system for all states.
- This system provides all necessary information on permits and licences required for starting a business.
- Permissions from municipal or village government bodies or police for filming movies should explicitly be mentioned.
- DPIIT recommends that the duration of licences be extended or renewed automatically based on self-certification or third-party verification.
- A state is also rewarded if a set of regulations do not apply to it.
- For the first time, BRAP rankings relied entirely on the feedback it received from the businesses.

The States Performance and Criticism:

- In the area of Ease of Doing Business, Andhra Pradesh secured the top spot for the third time since 2015, Uttar Pradesh jumped to second spot and Telangana slipped to the third spot.
- Gujarat was ranked 11th and Haryana slipped to 17th position.
- These rankings were criticized as the states like Gujarat and Haryana implemented all the reforms mentioned by the DPIIT but still ranked low.
- It is not clear if DPIIT used representative samples where samples are based on a number of business clusters or population.
- An analysis by CARE Ratings shows that the top ranking states in terms of EoDB are not associated with a higher share of investments and rankings do not consider the cost of doing business.

Conclusion:

- The DPIIT's Ease of Doing Business rankings have increased competition among states to improve their rankings and are benefiting businesses. The exercise is also helping the country to achieve a better rank at the international level which will help attract foreign investments into the country.
- For so long, investors from foreign countries are dissatisfied over the time taken and the number of permissions and licenses required to set up a business in the country. With the rankings exercise, states are improving their Ease of Doing Business and are attracting foreign investment.
- But, this year's ranking exercise became controversial for ranking states like Gujarat, which have implanted all the recommendations of DPIIT's Business Reform Action Plan (BRAP). Such discrepancies must be avoided in the future for the rankings to remain effective, else, states will lose trust in the rankings exercise.

31. Cyber Security Threat from China:

- The Zhenhua Data Information Technology Company is a Shenzhen-based technology company.
- It has links to the government in Beijing and the Chinese Communist Party.

- It calls itself a pioneer in using big data for hybrid warfare.
- Zhenhua keeps tabs on a very large number of individuals and organizations in India.

31.1. PLA into Cyber Warfare:

- After the Gulf War of 1991, the Chinese realized that the day of conventional wars was coming to an end.
- They analysed the importance of Information and Communication Technology (ICT) and stepped into it.
- This decision made China turn into the electronics factory of the world.
- The Central Committee of the Chinese Communist Party and China's military Commission approved the concept of 'Three Warfares' in 2003.
- The 'Three warfares' comprise psychological, media, and legal warfare.
- Then the PLA decided to step into the field of cyber warfare.
- The World about Cyber Warfare
- The Alexandria, the Virginia-headquartered American Cyber Security Firm Mandiant published a report in February 2013 that opened the lid of Chinese cyber operations.
- The report documented the evidence of cyber-attacks by PLA Unit 61398 whose exact location and address is in Pudong, Shanghai.
- Several computer hacking attacks were carried out by the Unit 61398, which is the Military Unit Cover Designator (MuCD) of the PLA's Advanced Persistent Threat (APT) unit.
- The report said that ATP had stolen billions of terabytes of data from 141 companies across 20 major industries.
- The work of Unit 61398 is a state secret in China.
- Unit 61398 needs its personnel to be trained in computer security and network operations and proficient in English.
- In 2014, the United States government discovered that a Chinese Unit was hacked into Personnel Management, a unit of the federal government and collected 21 million records of people.
- Among them, 4 to 5 million people worked for the US military and as CIA agents.
- The US Department of Justice indicted five PLA officers by name of cybercrime and it was for the first time the US took a step against a foreign power.

31.2. China's Civil-Military Fusion:

- China started a policy of weaponising its manufacturing capability of civilian products for military purposes.
- This is done by leveraging the control over any instrument by the original equipment manufacturer (OEM).
- China's experience of keeping its people under the surveillance has contributed its expertise in individual surveillance.
- In 2017, China passed a law under which all Chinese companies should assist the country's intelligence-gathering operation.
- China has now graduated to fight information warfare to a force equipped for intelligence warfare.
- The PLA can identify the key personnel and directly target them with cyber warfare.

Conclusion:

- The recent revelations of the Chinese hybrid warfare activity prove India right in its banning of the use of Chinese apps in the country. But, India must remain guarded to protect its network systems, state secrets, and personal information from going into the hands of the Chinese.
- The cyber warfare capabilities, both defensive and offensive, capabilities of the country must be enhanced to thwart any attacks from the Chinese. But, the fact is China has invested heavily in

cyber technologies and is next only to the United States. To bridge the gap with China, India needs to ramp up its investments in cybersecurity domain significantly.

32. Agreements with Israel - A Change in Middle East Geopolitics:

- The Arab states the United Arab Emirates and Bahrain will break a long lasting taboo and set to sign agreements to normalise relations with Israel which is perceived as a staunch enemy of Islam by many in the Arab world.
- The move by UAE and Bahrain is being considered as a strategic realignment of West Asian countries against Iran, as so far, Saudi Arabia, one of the biggest rival of Israel did not comment on the agreements.
- At the US-brokered event, Israeli Prime Minister will sign agreements with the Emirati Foreign Minister and Bahrain Foreign Minister.
- Since Israel signed peace treaties with Egypt in 1979 and Jordan in 1994, this is the third and fourth Arab states to take such steps.
- Bringing Israel, the UAE and Bahrain together reflects their concerns over Iran's influence in the region and development of missiles.

Significance of the Agreements:

- All the parties to the agreements consider the day to be the beginning of a 'warm peace' among them.
- Unlike Egypt and Jordan, UAE and Bahrain did not have a direct conflict with Israel.
- With the agreements, both these countries are looking towards technology exchange, business deals, investment generation and intelligence exchange to thwart threats from Iran.

What is in it For India?

- The historic agreements offer many opportunities for India.
- India has strong bilateral relations with all three countries.
- Israel and UAE are key strategic partners to India.
- The country can benefit by cooperating in areas like healthcare, agriculture, cyber security, energy, technology, water and more.

33. Land Degradation and Coral Reef Program:

- At G20 Environment Ministers Meet, a global initiative to reduce land degradation and coral reef program was launched.
- Under the Presidency of the Kingdom of Saudi Arabia, the Environmental Ministers Meeting (EMM) of G20 countries took place and is a part of Sherpa Track.
- Also at the G20 meet, two documents on climate change-related to managing emissions and climate change adaptations were launched.

33.1. New Global Initiatives:

Global Initiative on Reducing Land Degradation

- The aim is to strengthen the implementation of the existing framework, to halt, prevent, and reduce land degradation within G20 member countries.
- The program takes into account possible implications on the achievement of other Sustainable Development Goals (SDGs) and adhering to the principle of doing no harm.
- India has taken the largest target of the restoration of 26 million hectares of degraded land.

Global Coral Reef Program:

- The Global Coral Reef R&D Accelerator Platform is an innovative action-oriented initiative.

- The aim of coral reef programme is to create a global research and development (R&D) programme in advance research, innovation and capacity building in all areas of coral reef conservation, restoration, adaptation and strengthening ongoing efforts and commitments.

33.2. India and Coastal Protection:

- India has taken significant steps to protect the environment, wildlife and forest as well as pollution and climate change.
- India has been taking the necessary steps to enhance coral reef conservation.
- To protect and sustain the coral reefs in the country, the government launched the National Coastal Mission Programme.
- The Indian government made efforts towards achieving land degradation neutrality and attainment of global goals of climate change mitigation and adaptation.
- The key pillars for the achievement are equity, differentiated responsibilities, finance and technological partners.
- India is in talks on Paris Agreement and Climate commitments and taking adequate actions to meet the Paris Agreement goals.

National Coastal Mission Programme:

- Under the National Action Plan on Climate Change (NAPCC), the government launched the National Coastal Mission Programme.
- The programme is launched to address the impact of climate change on coastal and marine ecosystems.
- The aim is to protect the shorelines and communities in coastal areas against extreme weather conditions.
- **Some of the measures include:**
 1. strengthening the natural shields against extreme weather conditions for the protection of shorelines
 2. to improve employment generation opportunities for coastal communities
 3. to reduce pressure on the coastal and marine ecosystem adaptation and enhancing the productivity of coastal and marine ecosystems sustainably

34. Groundwater in Hindu-Kush Himalayan Region:

- According to a study 'Retreating Glaciers and Water Flows in the Himalayas: Implications for Governance' shows that the prominent areas of the Hindu-Kush Himalayan (HKH) region are retreating at an alarming rate.
- In the world, the Hindu-Kush Himalayan region is one of the most vibrant, distinct and intricate mountain systems.
- Within these mountain systems, it is estimated that 210 million people live and in the downstream of HKH 1.3 billion people live.
- All of them rely on freshwater obtained directly or indirectly from rivers and tributaries of the region.
- The study tries to understand the impact of glacial retreat on the region's water regime, the river basins and groundwater.
- The study shows the relationship between glacier decline and the changing surface water with the groundwater in the HKH region.
- In the upper and middle reaches of the Himalayan region, springs are the lifelines for people.
- They are the major source of water supply and are fed with a unique combination of surface and groundwater.

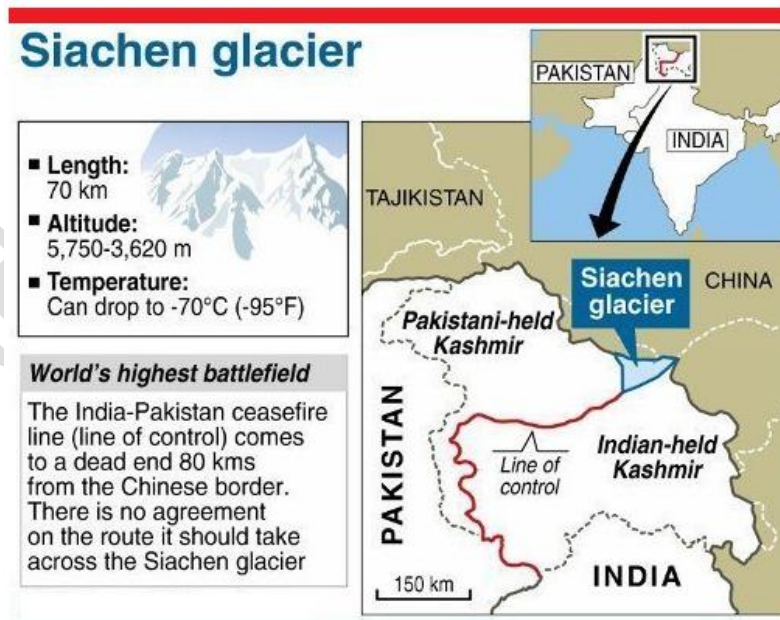
- The springs are declining due to the changing climatic conditions, lack of management and understanding of the interconnected systems.
- Under a favourable condition, groundwater comes out as seepage through springs.
- These are the main source of water supplies to rural and urban hamlets in the entire Himalayan region.
- Groundwater is declining in many locations of the HKH region.
- In higher altitudes, the water flow in rivers and springs are altering due to climatic changes.
- The study shows that the Himalayan region is trans-boundary in nature, with watersheds spread across various countries - eight.
- A regional approach and trans-boundary cooperation are necessary to protect the surface and groundwater resources in the HKH region.

34.1. Hindu-Kush-Himalayan (HKH) Region:

- The HKH region spans Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan.
- It traverses about 5 million square kilometres and hosts a large and culturally diverse population.
- It is considered the Third Pole (after the North and South Poles), and has significant implications for climate.
- It contains vast cryospheric zones and is also the world's largest store of snow and ice outside the polar region.
- The Siachen Glacier is a part of this region.

35. Siachen Glacier:

- It is located in the eastern Karakoram Range in the Himalaya Mountains, just northeast of the point NJ9842 where the Line of Control between India and Pakistan ends.
- It forms part of the Leh district of the Ladakh division in the Indian state of Jammu and Kashmir.
- In 1984, India launched Operation Meghdoot to capture the 76.4 km-long glacier on the Saltoro ridge. In this year, India first deployed its men at Siachen.



- **Nubra Valley** is close to Siachen Glacier. The glacier's melting waters are the main source of the Nubra River in the Indian region of Ladakh, which drains into the Shyok River.

36. New Solar Cycle Announced:

- NASA and National Oceanic and Atmospheric Administration (NOAA) jointly released a statement announcing the commencement of new solar cycle.
- The significance of the announcement is that Sun's activities impact space weather and the Earth.

Solar Cycle:

- The Sun follows a cycle of 11 years.
- During these years, the solar activities fluctuate between solar minima and maxima.
- Solar maxima - the highest number of sunspots
- Solar minima - the lowest number of sunspots depending on the number of sunspots detected on the sun.
- Sunspots are strong magnetic forces, which are small and dark with cooler areas formed on the solar surface.
- The sunspots appear at the highest altitudes and later shift towards the equator as the cycle progresses.
- An active Sun has more sunspots than the sun in its less active phase.

Determination of Solar Cycle:

- When the Sun reaches the lowest possible minima phase, a new cycle starts.
- The Sun's magnetic poles reverse every time the cycle changes.
- The Sun is highly variable and the data of sunspot formation and its progress need close monitoring.
- To confirm the minima phase, data of six to eight months are required to confirm.
- A Solar Cycle Prediction Panel predicts the number of sunspots, the year or period when the cycle would reach its peak after taking into consideration the forecasts from the global scientific teams.
- As per scientists, the solar cycle 24 had lasted between December 2008 and December 2019.
- The new solar cycle 25 has now commenced, with the sun's activities having reached its lowest minima between the two cycles.

36.1. Transition between Solar Cycle 24 and 25:

- During 2019 and early 2020, the Sun's activities are lesser, no sunspots were formed for 281 days in 2019 and 181 days in 2020.
- The solar activities have slowly picked up from December 2019 and corroborating the beginning of the new cycles.
- The panel termed the solar cycle 25 to be a weak one.
- The transition between the two cycles is an unusual one, where cycle 25 has begun with a hesitant start.
- During the transition phase, the sunspots from the two consecutive cycles overlap with each other.
- There are no sunspots for longer days at a stretch, suggesting a 'quite' sun.
- Between cycle 24 and 25, when they reached a point the number of sunspots divided in to 1.8 and lasted for a long time which means deep minima.
- Scientists noted that solar cycle 25 started in February, 2020.
- The solar cycle 24 is the weakest in the century and the fourth smallest intensity since 1755.
- In 2014 April, the highest number of sunspots observed was 114 and the average number is 179.

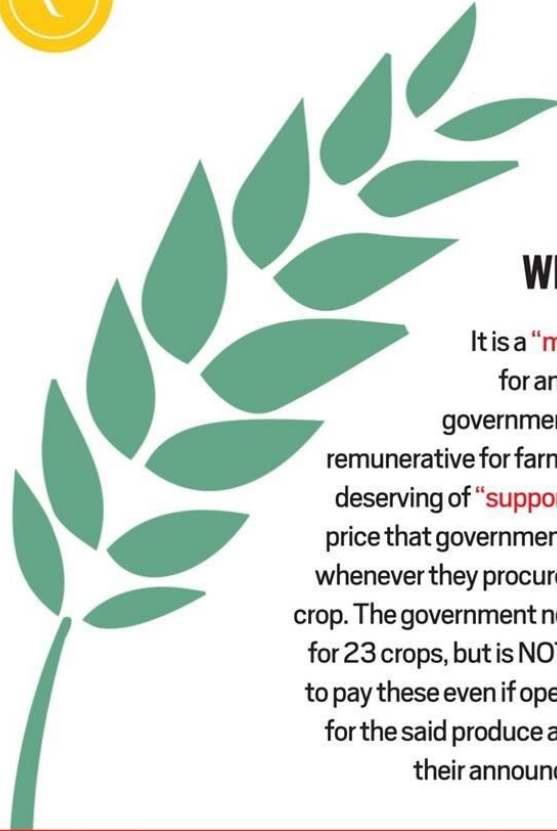
- The forecast shows that solar cycle 25 would peak in July 2025 and the number of sunspots would be 115.

Solar Activities:

- The solar activities influence the space weather which originates from the Sun.
- The solar activities include coronal mass ejection (CME), solar flares, energetic particles and high-speed solar winds.
- The solar activities like storms and flares can affect the space-dependent operations like Global Positioning Systems (GPS), satellite and radio communication, hampering flight operations, power grids and space exploration programmes.
- The coronal mass emissions are a danger to space weather.
- During solar peaks, ejections travel at a speed of 500km/second and create disturbances in Earth's magnetosphere.

37. The Farmers Bills Passed in Lok Sabha:

- To transform agriculture in India and to raise farmer's income, Lok Sabha had passed two bills related to agriculture.
- On 14th September 2020, the Union Minister of Agriculture and Farmers, Welfare and Rural Development and Panchayat Raj introduced 'The Farmers Produce Trade and Commerce Bill (Promotion and Facilitation), 2020 and 'The Farmers Agreement of Price Assurance and Farm Services Bill (Empowerment and Protection) 2020 were introduced in the Lok Sabha.
- Farmers will now be free from the restrictions of selling their produce at the designated places only.
- The procurement at the minimum support price will continue and the mandis under state laws will continue to operate.



WHAT'S MSP

It is a “minimum price” for any crop that the government considers as remunerative for farmers and hence deserving of “support”. It’s also the price that government agencies pay whenever they procure the particular crop. The government now fixes MSPs for 23 crops, but is NOT legally bound to pay these even if open market rates for the said produce are ruling below their announced floor prices

MINIMUM SUPPORT PRICE (MSP)

The Farmers Produce Trade and Commerce (Promotion and Facilitation) Bill 2020:

- This Bill provides an ecosystem where the farmers and traders enjoy the freedom of choice relating to the sale and purchase of farmers produce.
- This facilitates remunerative prices through competitive alternative trading channels.
- Trade and commerce of agricultural produce is now made transparent by enabling farmers to sell the produce without any barriers outside the deemed markets formed under State agricultural produce market legislations.
- Promotes inter-State and intra-state trade.
- It provides a facilitative framework for electronic trading.
- The Bill will open more choices for the farmer.
- It reduces the marketing costs for the farmers and helps them in getting better prices.
- Under this Act, the farmers will not be charged any cess for sale of their produce.
- A dispute resolution mechanism will be set up for the farmers.

One India, One Agricultural Market:

- The Bill aims at creating additional trading opportunities outside the APMC market yards.
- This will help farmers to get remunerative prices due to additional competition and will supplement the existing MSP procurement system.
- Also, the bill will pave the way for creating One India, One Agricultural Market.

The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill 2020:

- The Bill provides a national framework on farming agreements.
- It protects and empowers farmers to engage with processors, agri-business firms, wholesalers, aggregators, large retailers, exporters, etc., without any fear of exploitation.
- The risk of market unpredictability will be transferred to the sponsor.
- It enables the farmer to access modern technology and better inputs.
- It will improve the income of farmers by reducing the cost of marketing.
- The aim of the Bill is to attract private investment in building farm-related supply chain and agri infrastructure so that farm produce can be supplied to national and international markets.
- Farmers will engage in direct marketing and intermediaries will be eliminated.
- This results in the full realization of price.
- Farmer's land is protected against any recovery and sale, lease or mortgage of farmers land is prohibited.
- Effective dispute resolution mechanism will be provided with clear time lines for redressal.

38. Bamboo as an Immunity Booster:

- Experts have said that the bamboos are the cheapest sources of immunity boosters for increasing the human body's resistance to viral attacks.
- More than 25 experts from 11 countries converged digitally to mark the "World Bamboo Day" on the nutraceutical bamboo shoot.
- Foods that exhibit nutritional and medicinal functions are known as nutraceuticals.
- Bamboo is the tallest grass on the Earth, and its smallest shoots could be the cheapest immunity booster.
- In the northeast region, bamboo is considered as the grass of life and takes care of every requirement from birth to death.
- The present global market for bamboo shoots is \$1,700 million.
- Annually, 3 million tonnes of bamboo shoots are consumed globally.
- In the new age food products like vegetable proteins, bamboo concentration can increase its market potential and consumer acceptability.
- According to the National Bamboo Mission, India has the highest area of 13.96 million hectares under bamboo.
- India is considered as the second richest country after China in terms of bamboo diversity with 136 species.
- In India, 14.6 million tonnes of bamboo is produced annually.
- The bamboo-rattan industry in the country was worth Rs. 28,005 crore in 2017.
- The International Network for Bamboo and Rattan (INBAR) said China exports 68% of the world's bamboo and the products of rattan valued at \$1,112.

38.1. Bamboo Shoots:

- In many countries across South East Asia, bamboo is used as a vegetable, especially the bamboo shoots which are the edible part of the bamboo grass.
- It is emerging as high-value and safe edibles and growing in utility along with other bamboo products.
- The protein content in fresh bamboo is considered as a nutraceutical. It can range between 1.49% -4.04%.
- Bamboo contains 17 amino acids, 8 of which are essential for the human body.
- During Covid-19, the Philippines have worked wonders with bamboo and bamboo shoots.

- Bamboo is a key ingredient in new antimicrobial soaps and hand mists developed by Filipino scientists.

38.2. National Bamboo Mission:

- Under the Mission for Integrated Development of Horticulture, the National Bamboo Mission (NBM) is being implemented as a sub-scheme.
- NBM started in 2006-07 and subsumed under the MIDH for 2014-15 and 2016-17.
- NBM is a centrally sponsored scheme. **The objectives of NBM are**
 1. To enhance the yields with new and improved varieties.
 2. To increase the coverage area for bamboo.
 3. Promotion and marketing of bamboo products.
 4. For the development of the bamboo sector, establishing coordination and cooperation among stakeholders.
 5. Generating employment opportunities.

39. 60 Years of Indus Water Treaty:

- September 19, 2020, marks the 60th anniversary of the Indus Water Treaty (IWT).
- The Indus Water Treaty (IWT) is between India and Pakistan.
- This treaty is often cited as an example of the possibilities of peaceful coexistence between the troubled relationships.
- The World Bank acted as a third party and played a pivotal role in crafting the IWT.
- The role of India has been remarkable as a responsible upper riparian abiding by the provisions of the treaty.

The Indus Waters Treaty (IWT)

- The distribution of waters of the Indus and its tributaries between India and Pakistan is governed by the Indus Water Treaty (IWT).
- Was signed on Sept 19, 1960, between India, Pakistan and a representative of World Bank after eight years of negotiations.
- Partition of India cut across the Indus river basin, which has the Indus river, plus five of its main tributaries.

Western rivers
Chenab, Jhelum, Indus

India's rights over these rivers: Limited — can set up certain irrigation, run-of-the-river power plants, very limited storage, domestic and non-consumptive use, all subject to conditions

Eastern rivers
Sutlej, Beas, Ravi

India's rights over these rivers: All exclusive rights lie with India.

Indus Waters Commission a success story

- Once every five years, conducts a general inspection of all rivers in parts. Total inspection tours so far: Over 100
- Regularly meets once a year. Total meetings thus far, including those for taking up Pak objections: Over 100

Baglihar dam on Chenab

MAP NOT TO SCALE

Water Sharing:

- After the partition of India in 1947, dispute over the Indus rivers system was inevitable.
- After prolonged negotiations, a sharing formula was devised that divided Indus system into two halves.
- The three western rivers of the Indus, the Jhelum and the Chenab went to Pakistan while the three eastern rivers the Sutlej, the Ravi, and the Beas went to India.
- India conceded 80.52 per cent of the aggregate water flows in the Indus systems of Pakistan.
- To build replacement canals from the western rivers, India gave Rs. 83 crore in pounds sterling to Pakistan.
- For the complete rights on eastern rivers, India conceded its upper riparian position on the western rivers.
- Water was vital for India's development plans. So the waters of the eastern rivers were vital for the proposed Rajasthan Canal and the Bhakra Nangal Dam without which the Punjab and Rajasthan would be left dry.
- Jawaharlal Nehru inaugurated the Bhakra canals in 1963 and described it as 'a gigantic achievement' and a symbol of the nation's energy and enterprise.
- But Pakistan grieved that India got away with the total water flow of 33 million acre-feet on the eastern rivers.

Increase of Unease:

- Pakistan considers the sharing of water with India as unfinished business.
- Pakistan being a lower riparian state allows politicizing the issue.
- It maintains high troop levels and alertness around the canals of the eastern front, fearing India will take control of the western rivers.
- Due to its strategic location and importance, the Indus basin continues to receive international attention.
- The treaty has remained uninterrupted because India respects its signatory and values trans-boundary Rivers in the region in terms of both diplomacy and economic prosperity.
- There are several incidences of terror attacks like Indian Parliament in 2001, Mumbai attack in 2008, Uri incidents in 2016 and Pulwama in 2019 which would have prompted India within in the Vienna Convention on the Law of Treaties to withdraw from the IWT.

Renegotiation:

- There is a growing debate to modify the existing treaty.
- Now a new set of hydrological realities, advanced engineering methods in dam construction and de-siltation is an urgent need.
- The Article XII in the IWT says that modification can be done from time to time but notes that 'by a duly ratified treaty concluded for that purpose between the two governments'.
- India's best option is to optimize the provisions of the treaty.
- India is not utilizing the 3.6 million acre feet (MAF) of 'permissible storage capacity' granted by the IWT on the western rivers.
- Poor water development projects allowed 2-3 MAF of water to easily flow into Pakistan.
- Out of the total estimated capacity of 11406 MW electricity that can be harnessed from the western rivers in the Kashmir only 3304 MW has been tapped.

40. Long-Term Effects of COVID-19:

- A new research shows that patients who survived from COVID-19 are now suffering from long-term health issues.

- For the first few months of the pandemic, doctors were devoted to preventing the transmission and how to take care of the patients in the hospital. But attention was not paid to the after effects of the disease.
- SARS-CoV-2 is essentially a virus that hits the lungs in a smaller subset.
- Now it seems to have an impact on lungs, brain, heart and increasing the risk of long-term health issues and life-threatening complications.
- Some people who had mild versions of the disease continue to experience symptoms after their initial recovery.
- People who tested positive but were asymptomatic during their disease are not immune to long term effects.
- Researchers from China said that CT scans done in the asymptomatic people revealed abnormal radiological findings in one lung in 66.7% of the asymptomatic people and abnormalities in both lungs in 33.3% on them.
- Senior citizens and people with co-morbidities are more likely to suffer long-term effects.
- Children and young adults who had milder versions of the diseases are reporting symptoms.
- The WHO mentions a telephonic survey of symptomatic adults: 35% had not returned to their usual state of health after 2-3 weeks of testing.
- 20% of those in the 18-34 years age group, who were in good health, reported that some symptoms were prolonged.
- Countries are now realizing the importance of assessing the long-term impact and exploring solutions to rectify the damage.
- One such project is the UK's PHOSP (post hospitalization) COVID project is a global project - to study patients who have been hospitalized with COVID-19.
- To gain a comprehensive picture of the impact of COVID-19, the project team will track clinical assessments of 10,000 patients and will develop new strategies to improve long-term health.

41.1. Complications of COVID-19:

- The Vaccine Research Group, Mayo Clinic, US said COVID-19 has several mysterious compared to a normal respiratory virus.
- There is a diminution of immunity, head-aches, long-term fatigue and difficulty with cognition, vertigo and cardio-respiratory fitness.
- This disease can cause cellular level damage.
- The most common symptoms are fatigue, shortness of breathing, cough, headache, joint and muscle pain.
- Doctors who recovered from COVID-19 in Chennai complained about chronic fatigue, muscles pain and weakness.

40.2. The organs that may affect by COVID-19 includes:

- **Heart** - Damage to the heart muscles even in those with mild symptoms, increasing the risk of heart failure or heart complications.
- **Lungs** - long-standing damage to the air sacs, leading to long-term breathing problems.
- **Brain** - seizures, strokes and Guillain-Barre syndrome which causes temporary paralysis and risk of developing Parkinson's and Alzheimer's disease.
- **Blood** - clumping up of blood cells and forming clots. Large clots can cause heart attacks and strokes. The heart damage caused by the COVID-19 is stemmed from small clots that block capillaries in the heart muscle. Such clots can affect other organs like the lungs, legs, liver, and kidneys.
- **Mood disorders** - development of post-traumatic stress disorder, depression and anxiety.

41. Conservation of Red Pandas:

- According to scientists, identifying and monitoring corridors is the key step in the conservation of the red pandas in the Himalayan region.
- Recently, scientists classified red pandas into two phylogenetic species.
- The scientists described the Siang River in Arunachal Pradesh as a potential boundary for the species divergence between the Chinese red panda (*Ailurus styani*) and the Himalayan red panda (*Ailurus fulgens*).
- The species are grouped under two different clusters based on genomic DNA analyses of about 132 fecal samples collected from North West Bengal, Sikkim and Arunachal Pradesh.
- The Himalayan red pandas are represented as Clad1 was formed by the inclusion of samples from the North West Bengal, Sikkim, Central Arunachal Pradesh and South Tibet.
- Chinese red pandas are represented as Clad2 was formed by the inclusion of the samples from Dibang valley of eastern Arunachal Pradesh, India and Southwest China.
- The International Union of Conservation of Nature (IUCN) classified red pandas as endangered species.
- The population of red pandas have declined by 50% in 20 years.
- The regions where the two species found are the eastern and north-eastern Himalayan subalpine forests and the eastern Himalayan broadleaf forests that fall in China, Nepal, Bhutan, India and northern Myanmar.
- September 19 is marked as International Red Panda Day.
- There are about 2500 red pandas in the wild, of which one third are in India.
- The scientists with the Centre for DNA Taxonomy and Zoological Survey of India (ZSI) said that the survey in the Kanchenjunga landscapes emphasized the need for the identification of biological corridors and their monitoring for the conservation of the species.
- The study of biological corridors helps in studying habitat degradation, anthropogenic pressure and also the availability of bamboos in the habitat.

42. 'Feluda Test' for COVID-19:

- The Drugs Controller General of India (DCGI) launched an accurate and low-cost paper-based test strip to detect COVID-19 in less than 30 minutes for commercial use.
- The test has been named as Feluda by the research team of the Council of Scientific and Industrial Research (CSIR) and Tata Group.
- Feluda is a fictional private detective from West Bengal created by the writer and filmmaker Satyajit Ray.

New Feluda Test:

- Feluda is known as FNCAS9 Editor Linked Uniform Detection Assay.
- It uses CRISPR gene-editing technology to identify and target the genetic material of SARS-CoV2.
- The test matches the accuracy levels of RT-PCR tests and is considered as the gold standard in the diagnosis of COVID-19.
- It has a quick turnaround time and requires cost-effective equipment.
- The US is the first country in the world to approve a CRISPR-based test for COVID-19. This test was developed by the Massachusetts Institute of Technology and Harvard University.
- The Tata's Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) test powered by CSIR-Institute of Genomics and Integrative Biology (IGIB) Feluda has met the benchmark with 96% sensitivity and 98% specificity for detecting coronavirus.
- Feluda is the world's first diagnostic test to deploy a specifically adapted Cas9 protein.
- To detect SARS-CoV2, the other CRISPR tests use CAS12 and CAS 13 protein.

- The research team created the new test kit while working under the sickle cell mission for genome diagnostics and therapeutics.

42.2. CRISPR Technology:

- CRISPR is a gene-editing technology and is used in correcting genetic defects, treating and preventing the spread of the diseases.
- It can detect specific sequences of DNA within a gene.
- It uses an enzyme functioning as molecular scissors to snip the DNA sequence.
- It allows for easy alteration of the DNA sequences and modify gene function.
- CRISPR technology can be configured for the detection of multiple pathogens in the future.

Significance of Feluda:

- The approval of Feluda addresses the urgent need for ramping up testing capacity in the country to curtail the spread of coronavirus.
- It is relatively easy to use and is affordable than the expensive RT-PCR machines being used to test the sample.
- The short period of 30 minutes for results will also enable faster detection of COVID-19 patients and treatment can be initiated immediately.
- The development of the test kit while working on sickle cell mission for genome diagnostics shows the interconnectedness of scientific knowledge and technology.
- According to the innovators, the 'Made in India' test kit is 100% safe to use and is of high-quality.

43. Labour Code Bills Passed:

- The Lok Sabha has cleared three labour code bills with new versions.
- The bills include Industrial Relations Code Bill, 2020, Occupational Safety and Health and Working Code Bill, 2020 and Code on Social Security Bill 2020.
- The government proposes to increase the social security by including the gig workers and inter-state migrant workers.
- It proposed measures that will provide greater flexibility for employers to hire and fire workers without government permission.

Key Proposals:

- The government has proposed more conditions in the Industrial Relations Code Bill 2020, by restricting the right of workers to strike, an increase in threshold relating to layoffs and retrenchment in industrial establishments having 300 workers from 100 workers or more, to provide more flexibility to employers for hiring and firing workers without government permissions.
- The Industrial Relations Code Bill has raised the threshold for the requirement of a standard order which enables the companies to introduce arbitrary service conditions for workers.
- States like Rajasthan have already increased the threshold.
- According to the Labour Ministry, this rule has resulted in an increase in employment and a decrease in retrenchment.

Concerns over New Labour Laws:

- Experts say that increase in the threshold may water down the labour rights for workers in the small establishments having less than 300 workers.
- The new Code also introduces new conditions for carrying out a legal strike.

- Before going for a legal strike, the period for arbitration proceedings has been included in the conditions for workers.
- The IR code proposes that no worker should go on strike without a 60-day notice and during the pendency of proceedings before a Tribunal or a National Industrial Tribunal and sixty days after the conclusions of the proceedings.
- The Standing Committee on Labour had recommended against the expansion of the strike beyond the public utility services like water, electricity, natural gas, telephone and other essential services.
- Now, a person employed in the public utility services cannot go for a strike unless he gives a notice for a strike within six weeks before going on the strike or 14 of giving such notice.
- But the proposed IR code is applicable for all the industrial establishments.

Proposals for Workers:

- The IR Code Bill has proposed a worker re-skilling fund.
- The contributors for the fund are detailed from the employer of an industry amounting to 15 days wages last drawn by the worker immediately before the retrenchment along with the contribution of other sources.
- The two other Codes have also proposed the changes for expanding social security and inclusion of inter-state migrant workers.
- The Social Security Code proposes the National Social Security Board.
- The National Social Security Board guides the central government for formulating suitable schemes. These schemes are for different sections of unorganized workers, gig workers and platform workers.
- For social security, the aggregators employing gig workers will have to contribute 1-2% of their annual turnover.
- The Occupational Safety, Health and Working Conditions Code defined the inter-state migrant workers as the worker who has come on his own from one state and working in another state earning up to Rs 18000 per month.
- The Code has dropped the provision for temporary accommodations for workers near the work sites.
- The Code proposed a journey allowance where the employer should pay a lump sum amount for to and fro journey of the worker.

44. Five New Amphibian Species Identified In MP:

- Researchers from Wildlife Institute of India, Dehradun conducted a study on amphibians in the central Indian Panna Tiger Reserve.
- The study added five amphibians to the Madhya Pradesh fauna list.
- The five species are the dwarf toad found in peninsular India, Odisha paddy frog an inhabitant of eastern India, wrinkled cricket frog which was earlier observed in Karnataka, Pierre's cricket frog seen in Nepal, Assam and Bhutan and western burrowing frog which was seen in western India.
- The researchers recorded a call library of eleven species.
- They have obtained the molecular confirmation through DNA of the cryptic species.
- As Central India is dry, the amphibians are spotted only during monsoons from late June to early August.
- To study the area, the team spent 86 days over two years.
- The team located the breeding aggregation of frogs by following the chorus.
- The species complete call is recorded by sitting one meter away from the frog.
- The major achievements of the group are recording the advertisement calls of the western burrowing frog for the first time.

- The western burrowing frog is identified for the first time in 2017 from populations in Maharashtra, Gujarat and Karnataka.
- The team recorded 30 calls from three males and this is the first acoustic data for this species.
- The group studied 15 species among them 12 are frogs and three are toads.

Cryptic Species:

- The cryptic species is a term used to refer the species that appear the same but show differences when DNA is examined.
- To identify the cryptic species correctly multiple techniques are used.

Importance of Amphibians in the Ecosystem:

- Amphibians, especially frogs, are exceptional indicators of ecosystem's health.
- The skin of frogs are permeable making them vulnerable to drought and toxic substances.
- They act as health indicators for key ecosystems like forests and wetlands which contribute billions of dollars to the economy.
- In farms, the frogs eat insects and mosquitoes thereby protecting the farm from pests.
- They also form a key part of food chain in an ecosystem.
- World over, the population of frogs are declining drastically. While fungal infection is a minor reason, habitat destruction due to human activities is a major reason.
- The identification of the new species in Madhya Pradesh adds to the knowledge of amphibians in the country and also help in conservation efforts.

45. Indian Sandalwood Forests are Being Threatened:

- The Sandalwood Spike Disease (SSD) is destructive to sandalwood trees.
- Sandalwood is an aromatic tree with natural habitats found in Kerala, Tamil Nadu and Karnataka forests.
- SSD has been found to resurface in Kerala and Karnataka.
- According to a study conducted by scientists from Bengaluru-based Institute of Wood Science & Technology (IWST) has found that sandalwood forests in Marayoor of Kerala and the reserves forests of Karnataka, including MM Hills are heavily infected with SSD.
- The disease is threatening the species because there is no cure for SSD.
- Currently, the only way a tree can be saved is by cutting down and removing the infected part or removing the tree to prevent the spread of the disease.
- The Sandalwood Spike Disease (SSD) is caused by phytoplasma - bacterial parasites of plant tissues. The bacteria is transmitted by insect vectors.
- Every year, the disease kills 1 to 5% of sandalwood trees.
- Scientists are worrying that if immediate measures are not taken to prevent the spread of the disease, it will eradicate the entire natural population.
- They are also worrying that if the spread continues, the disease will affect cultivated sandalwood trees.
- For over a century, SSD has been one of the major reasons for the decline of sandalwood production in the country.
- First spotted in Kodagu in 1899, between 1903 and 1916, over a million sandalwood trees were removed due to the disease.
- In the year 1907, the Maharaja of Mysore announced a reward of Rs. 10000 for anyone finding a remedy for the disease.
- Later, between 1917-1925, 83734 trees were extracted in Salem due to SSD.
- The impact of the disease was so severe in Karnataka that between 1980-2000, the growing stock of the tree was reduced to 25%.

- In 1998, because of the devastation, sandalwood tree has been classified as vulnerable by the International Union for Conservation of Nature (IUCN).
- As per the scientists of the study, the current spread of the disease has been attributed to the restrictions on green felling in forests.
- Presently, identifying the symptoms of SSD is very difficult as the infection can be identified only after the entire tree is affected.
- IWST is set to join hands with the Pune-based National Centre for Cell Sciences for a three-year study to combat the killer disease.
- The study is initiated by the Union Ministry of Ayush and a financial allocation of Rs. 50 lakhs has been provided.

Sandalwood Uses:

- Indian sandalwood is much sought after in the international market for its quality.
- The sandalwood oil is used in perfume industries and others.
- The sandalwood tree occur in coastal dry forests and are found up to an elevation of 700m.
- The tree grows well in areas where temperatures do not exceed 38° C and the annual rainfall is between 500 and 3000 mm.

46. Defence Acquisition Procedure 2020 Unveiled:

- The Defence Procurement Procedure was first promulgated in the year 2002. Since then, it is revised periodically.
- The current updated procedure was formulated by Main Review Committee under the chairmanship of Shir Apurva Chandra and was accepted by the Defence Ministry.
- The new procedure will come into effect from 1st October 2020.
- DAP 2020 aligns with the government's Atmanirbhar Bharat Abhiyaan, empowering the Indian domestic industry and make India a global manufacturing hub.
- There are specific provisions for encouraging FDI, import and export substitutions while protecting the interests of the Indian domestic industry.

46.1. Some Reforms Brought by DAP 2020:

- There will be a list of weapons/platforms which will be banned from importing. This is to promote the manufacture of these weapons/platforms domestically.
- Under the indigenisation of the imported spares clause, some new procedures have been included.
- At the request for information stage, the prospective foreign vendors' willingness to progressively undertake manufacturing within the country through the development of the indigenous ecosystem for spare/sub-components will be explored.
- A new category of Buy (Global - Manufacture in India) necessitates the manufacture of the entire equipment/part of it or spares/assemblies/Maintenance, Repair and Overhaul (MRO) facility through a subsidiary in India.
- FDI in the new Buy (Global - Manufacture in India) necessitates OEMs to set up manufacturing/maintenance units in the country through a subsidiary.
- Trial procedures for the weapons and systems have been simplified and are based on principles of transparency and equal opportunities to all. The procedures foster competition.
- To promote Ease of Doing Business, the DAP 2020 has simplified procedures and delegated processes making the procurement process industry-friendly.
- There is an overall enhancement of indigenous content in defence procurement across categories.

46.2. End to Offset Clause:

- Offset clause in defence procurement when done through **Inter-government Agreement (IGA)**, government-to-government or in a single vendor situation has been done away.
- Earlier, the offset clause required a foreign vendor to invest a part of contract value in India.
- But, offsets will continue in the multi-vendor competitive procurement contracts.
- This means offsets will be reduced substantially.
- In the deal to buy 36 Rafael fighter jets under the India-French government agreement, a 50% offset clause has been included.
- But, the new rules do not apply retrospectively, thus not impacting the existing contracts.

Leasing:

- Leasing or asset acquisition for a limited period has been introduced as a new chapter in the DAP 2020.
- This is for the first time government is allowed to hire equipment from domestic or foreign vendors.
- Under the Make & Innovation, a new category Make III for indigenous manufacturing of equipment, platforms or spare, assemblies, sub-assemblies for import substitution has been introduced.
- These and many other changes in the DAP 2020 make indigenisation of defence manufacturing more realistic. The DAP 2020 aligns with the government's aim to make India self-reliant in defence manufacturing.

47. GI Tag for Sikkim's Chilli:

- The Geographical Indication (GI) registry of India has accepted Dalle Khursani, one of the hottest chillies in the world.
- As per the documents submitted to the GI registry, the logo for the GI product will bear the name "Dalle Khursani Chilli Sikkim".
- The North Eastern Regional Agricultural Marketing Corporation Limited was the one that applied for the GI tag for Dalle Khursani.

Dalle Khursani:

- The chilli has a unique flavour and high pungency.
- It is cherry-sized and almost round.
- When the fruit is fully ripe, it turns bright red.
- The chilli has a Scoville score in the range of 100,000 to 350,000 SHU (Scoville Heat Units).
- Grown across Sikkim, Dalle Khursani is one of the most valuable cash crops.
- The chilli is valued for its diverse commercial uses.
- The crop is perennial and is characterised by small and medium sized pods.
- In the state, the annual production of the chilli is between 35 to 40 metric tonnes.
- Locally, the chilli is used in various dishes including to prepare pickles and sauce.
- The chilli variety is also known to exhibit medicinal properties.
- Darjeeling Farmers Feel Left Out
- The chilli is grown not just in Sikkim, but in the adjoining eastern Himalayan regions, especially in the Darjeeling hills.
- Chilli farmers from the adjoining Darjeeling hills are apprehensive that the name Sikkim on the logo will have implications for them.
- They feel that they have been completely left out from the geographical region where the chilli variety is grown and will be deprived of the benefits GI classification provides.
- Official Take
- The GI registry has accepted and published the GI application for Dalle Khursani in its GI Journal on August 31, 2020.

- The application will be in the public domain and the GI certificate will be issued if there are no objections in the next four months.
- As per the officials of the registry, when something is registered as GI, it is deemed to be the property of the government of India. Considering it to be the property of state is a misconception.
- A GI property is a community property based on traditional knowledge and the application for Dalle Khursan was based on the cultivation of the plant species in a particular area and is not the question of a state.
- Four other chillies from the north-east region with very high SHUs have been included in the GI list.
- For example, Bhut Jolokia or Ghosh chilli or Naga King Chilli is grown across Nagaland, Assam, Arunachal Pradesh and Manipur. But, the GI tag for the chilling is given to Nagaland.
- GI tags are awarded on the basis of the Geographical Indications of Goods (Registration and Protection) Act, 1999.

48. New Guidelines on Groundwater Extraction:

- As per the new guidelines, no objection certificate (NOC) is mandatory for industries, private water supply tankers, and group housing societies to extract groundwater.
- Those who do not comply with the guidelines will attract a penalty between Rs. 50,000 and Rs. 10 lakhs.
- NOC is a must for all new and existing industries, infrastructure projects, industries seeking expansion and mining projects unless specifically exempted.
- NOC must be obtained from the Central Ground Water Authority or the concerned state/UT Ground Water Authority.
- Five categories have been exempted from obtaining NOC -
- In both rural and urban areas, individuals can use groundwater for drinking purpose and for domestic uses
- Rural drinking water supply schemes
- In both rural and urban areas, Armed Forces Establishments and Central Armed Police Forces establishments are exempted from obtaining NOC
- Agricultural activities
- Micro and small enterprises drawing groundwater less than 10 cubic metre/day.
- For group housing societies, where the local government water supply agency is unable to supply the requisite quantity, obtaining a NOC is mandatory and also they have to pay charges.
- A NOC issued will be valid for 2-5 years depending on the entity.
- The guidelines state that no person or entity is allowed to sell groundwater without a NOC. This means all private water tankers must obtain NOC to abstract groundwater.
- The bulk water suppliers must pay abstraction charges for drawing groundwater in safe, semi-critical and critical assessment units. **They are as below:**
- Safe areas - Rs. 10/cubic metre
- Semi-critical areas - Rs. 20/cubic metre
- Critical areas - Rs. 25/cubic metre
- Over exploited areas - Rs. 35/cubic metre
- No charges are levied for residential apartments, group housing societies, and government supply agencies in urban areas for domestic use upto 25 cubic metre/month.
- Beyond this, a charge of Rs. 1/cubic metre for groundwater withdrawal between 26-50 cubic metre per month and Rs. 2/cubic metre for over 50 cubic metre per month are levied.
- The charges for packaged drinking water units will be Re 1/cubic metre to Rs 120/cubic metre depending on the quantum of groundwater withdrawal and the area.
- While charges will be between Rs 1/cubic metre to Rs 20/cubic metre for industries and infrastructure projects.

- For mining projects, the charges will be between Re 1/cubic metre to Rs 7/cubic metre.
- All those seeking NOC must install digital water flow meters.
- The guidelines also mention Environmental Compensation for those who do not obtain NOC.

The rate of compensation is as follows:

- Packaged drinking water unit - Rs. 12/cubic metre to Rs. 120/cubic metre
- Mining/Infrastructure dewatering projects - Rs. 15/cubic metre to Rs. 150/cubic metre
- Industrial Units - Rs. 20/cubic metre to Rs. 200/cubic metre
- The minimum compensation will be at least Rs. 1 lakh.
- As per the guidelines, district authorities will have the power to enforce measures like abstraction structure sealing and prosecuting the violators of NOC conditions.

Overexploited Areas:

- The guidelines clearly mention that NOC shall not be granted for groundwater abstraction to any new industry except MSMEs in an overexploited assessment unit.
- Similarly, NOC will not be granted to new packaged drinking water units in overexploited areas.
- However, for drinking/domestic use for work force and green belt use shall be permitted for these new industries in an overexploited area.

Country-wide Assessment:

- The Central Ground Water Board made a country-wide assessment of groundwater resources.
- There are 6881 units across the country. Of these, 4310 units have been designated as safe areas, 972 as semi-critical, 313 as critical and 1186 units as overexploited. There are 100 units which are saline.

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