

GS-1

C.A From 24th July to 31st July 2019

Lightening in India

Twenty-nine people have been killed by lightning over the past 36 hours in Bihar. Most deaths have occurred in Jamui -- eight. Earlier, 11 people were killed by lightning on July 20.

Why and how -- and how frequently -- does lightning kill in India?

How common are deaths by lightning?

- It is more common than is sometimes realised in the urban areas.
- As a whole, India sees 2,000-2,500 lightning deaths every year on average. Lightning is the biggest contributor to accidental deaths due to natural causes.
- A few years ago, over 300 people were reported killed by lightning in just three days -- a number that surprised officials and scientists.
- Several thousand thunderstorms occur over India every year. Each can involve several -- sometimes more than a hundred -- lightning strikes. Dr Sunil Pawar of IITM says incidents of lightning have been showing an increasing trend over the last 20 years, especially near the Himalayan foothills.

What is lightning, and how does it strike?

- Lightning is a very rapid -- and massive -- discharge of electricity in the atmosphere, some of which is directed towards the Earth's surface. These discharges are generated in giant moisture-bearing clouds that are 10-12 km tall. The base of these clouds typically lies within 1-2 km of the Earth's surface, while their top is 12-13 km away. Temperatures towards the top of these clouds are in the range of minus 35 to minus 45 degrees Celsius.
- As water vapour moves upward in the cloud, the falling temperature causes it to condense. Heat is generated in the process, which pushes the molecules of water further up.
- lightning deaths, lightning deaths in india, what is lightning, why lightning kills
- Several thousand thunderstorms occur over India every year. Each can involve several -- sometimes more than a hundred -- lightning strikes.

- As they move to temperatures below zero degrees celsius, the water droplets change into small ice crystals. They continue to move up, gathering mass -- until they are so heavy that they start to fall to Earth.
- This leads to a system in which, simultaneously, smaller ice crystals are moving up and bigger crystals are coming down.
- Collisions follow, and trigger the release of electrons -- a process that is very similar to the generation of sparks of electricity. As the moving free electrons cause more collisions and more electrons, a chain reaction ensues.
- This process results in a situation in which the top layer of the cloud gets positively charged, while the middle layer is negatively charged. The electrical potential difference between the two layers is huge -- of the order of a billion to 10 billion volts. In very little time, a massive current, of the order of 100,000 to a million amperes, starts to flow between the layers.
- An enormous amount of heat is produced, and this leads to the heating of the air column between the two layers of the cloud. This heat gives the air column a reddish appearance during lightning. As the heated air column expands, it produces shock waves that result in thunder.

How does this current reach the Earth from the cloud?

- While the Earth is a good conductor of electricity, it is electrically neutral. However, in comparison to the middle layer of the cloud, it becomes positively charged.
- As a result, about 15%-20% of the current gets directed towards the Earth as well. It is this flow of current that results in damage to life and property on Earth.
- lightning deaths, lightning deaths in india, what is lightning, why lightning kills
- There is a greater probability of lightning striking tall objects such as trees, towers or buildings.
- Once it is about 80-100 m from the surface, lightning tends to change course towards these taller objects.
- This happens because air is a poor conductor of electricity, and electrons that are travelling through air seek both a better conductor and the shortest route to the relatively positively charged Earth's surface.

What precautions should be taken against lightning?

- Lightning rarely hits people directly -- but such strikes are almost always fatal.
- People are most commonly struck by what are called "ground currents". The electrical energy, after hitting a large object (such as a tree) on Earth, spreads laterally on the ground for some distance, and people in this area receive electrical shocks.
- It becomes more dangerous if the ground is wet (which it frequently is because of the accompanying rain), or if there is metal or other conducting material on it. Water is a conductor, and many people are struck by lightning while standing in flooded paddy fields.
- Predicting a thunderstorm over a pinpointed location is not possible. Nor is it possible to predict the exact time of a likely lightning strike.
- For reasons given above, taking shelter under a tree is dangerous. Lying flat on the ground too, can increase risks. People should move indoors in a storm; however, even indoors, they should avoid touching electrical fittings, wires, metal, and water.

Iconic tourists site

Why in news?

During her Budget speech earlier this month, Finance Minister Nirmala Sitharaman said that 17 "Iconic Tourist Sites" in the country would be developed by the government "into world class tourist destinations, to serve as a model for other tourism sites". The initiative was aimed at enhancing India's soft power.

The Sites

Taj Mahal and Fatehpur Sikri (Uttar Pradesh), Ajanta & Ellora (Maharashtra), Humayun's Tomb, Red Fort and Qutub Minar (Delhi), Colva (Goa), Amer Fort (Rajasthan), Somnath and Dholavira (Gujarat), Khajuraho (Madhya Pradesh), Hampi (Karnataka), Mahabalipuram (Tamil Nadu), Kaziranga (Assam), Kumarakom (Kerala) and the Mahabodhi Temple (Bihar).

The Vision

- "The government is looking at overall development from the tourism point of view in and around these sites — which includes roads and infrastructure, hotels and lodges, connectivity and access".

- As such, several ministries, from Railways to Civil Aviation, will be involved, while the Tourism Ministry will be the nodal agency. In keeping with international standards, interventions in and around the monuments will have elements of universal accessibility, green technology, and enhanced security for tourists.

The Funding

- The Tourism Ministry has been allocated Rs 1,378 crore for the development of tourism infrastructure.
- This is only marginally more than the allocations in 2017-18 (Rs 1,151 crore) and 2018-19 (Rs 1,330 crore).

Status of 'Adopt a Heritage' scheme

- Many of these monuments were opened up for adoption in late 2017 under the Ministry of Tourism's Adopt a Heritage scheme.
- The Red Fort was adopted by the Dalmia Group, while the Qutub Minar and the Ajanta Caves were adopted by Yatra Online.
- But the momentum of the scheme has slowed down since, and only 11 MoUs have been signed so far.

Punjab agriculture crisis

Context

Huge swathes of agricultural land have been damaged by the severe waterlogging in five districts of Punjab, mainly in Bathinda, after unprecedented single day rain.

Waterlogging happens due to several factors like the geography of the land, excessive flow of water into a place without proper drainage systems and certain soil conditions.

In Punjab, a potent mix of incessant rain coupled with a lack of clean and capable drainage system and water storage pits has led to the present situation.

How can wells prevent waterlogging?

- With proper drainage system in the fields, experts say, the excessive water in the fields can be directed into these wells which have a good capacity of holding water.

- The Soil and Conservation Department of the Punjab Agriculture University (PAU) in Ludhiana has been reviving these abandoned wells under the All India Coordinated Research Project (AICRP).
- Before sending water into the well, a small pit is dug in the field close to the well where the water is first held. The water from here overflows into the well.
- The bottom of the well is covered with brick blast (small pieces of bricks) up to 10 to 12 inch so as to protect against soil erosion at the bottom due to water falling directly from a height.
- This was one of the safest ways of water recharging and preventing water logging to a large extent.

How does the pit help clean the water?

- Since Punjab is a heavy user of pesticides, the impurities in the field water will get diluted in the pit after which the brick blast at the bottom of well will absorb these impurities as well as the silt,
- “The safe water goes into the earth from the first layer of soil to the other layers slowly,” he added.
- The brick blast will need to be cleaned after every five years and protected by removable slabs.
- The biggest benefit is that if the farmer needs water for irrigation he can use the well instead of extracting water from the ground using a tube well.
- With about 84 per cent of Punjab’s land under cultivation, this method has huge potential to recharge the entire state’s water table which has been depleting over the years because of extensive use of tubewell for farming.

Is it safe to send excessive water into the fields through bore wells?

- Experts warn against this method as it “will contaminate the safe groundwater” as the chemicals from crop sprays will directly enter the deep layer of soil.

What are other benefits of old abandoned wells?

- In canal fed areas, the excess water can be stored in these wells to recharge the earth. This can also reduce the expenditure on tube wells which now need to be deepened every other year.

Water stress: India

Context

The recent acute water shortage in Chennai has fuelled concerns that a potential water crisis is awaiting India's large cities, which are grappling with the pressures of rapid population growth, depletion of water resources and adverse effects of climate change.

What does report says?

- The sub-national Water Stress Index, formulated by London-based risk analytics firm Verisk Maplecroft, lists India as the 46th highest risk country in the world.
- What's more worrying is that 11 of India's 20 largest cities face an 'extreme risk' of water stress and seven are in the 'high risk' category.
- According to the index, Delhi, Chennai, Bengaluru, Hyderabad, Nashik, Jaipur, Ahmedabad and Indore are among the cities facing 'extreme risk'.
- The index measures the water consumption rates of households, industries and farm sectors and the available resources in rivers, lakes and streams.
- The index suggests that Bengaluru and Surat are experiencing the greatest surge in demand for water and are most at risk of facing scarcity.
- Chennai and Delhi are extremely vulnerable too, the paper notes. Moreover, increasing demand for water could lead to an economic crisis.
- The United Nations estimates that Delhi's population will grow from 28 million people to above 43 million by 2035, a 52% rise, while Chennai will grow by 47% to top 15 million over the same period.

Climate change vulnerability index

- India is rated 'high risk' in the Climate Change Vulnerability Index, which suggests that effects of climate change like an 'extended dry season' would make matters worse for the country's cities.
- The study says, "Many major Indian cities are projected to experience a higher number of consecutive drought days when precipitation is less than 1 mm.
- Bengaluru, for example, is expected to experience 5% increase in consecutive drought days by 2060, relative to the period from 1981 to 2005."

Migration in India

A report

In India, most men migrate for work while most women migrate after marriage. However, some States, especially those in the northeast, don't follow this trend.

Salient observation points

A. Migration for work among male migrants and relocation after marriage among female migrants are relatively low in most of the northeastern States.

B. After the Northeast, the States in the western and southern regions witnessed relatively lower migration rates of men for work. The States in the south also recorded low migration rates of women post marriage.

C. The eastern States recorded some of the highest male migration rates for work.

D. In every State, less than 1% of female migrants moved for education. On the contrary, in all the States >1% men migrants moved for education. Relocation for education was more pronounced in the northeastern States.

Close to 10% male migrants in Meghalaya moved out due to marriage while Manipur saw the highest female migration rates for work.

GS-2

Indian Forest Act (IFA)

Why in news?

DISTRICTS with sizeable tribal populations saw several protests and demonstrations on Monday. The protests were organised by the Bhumi Adhikar Andolan. There were two issues that the demonstrators were decrying.

One, the proposed amendments to the Indian Forest Act (IFA), 1927; the concerned amendments to the IFA have been sent to states for consultation. Two, a move to oust forest-dwellers from forest land; a case to this effect concerning the Forest Rights Act (FRA) comes up for its next hearing before the Supreme Court on Wednesday.

What is the FRA case before the Supreme Court?

- On February 13 this year, the Supreme Court ordered the eviction of lakhs of tribals and other traditional forest dwellers whose claims

under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (or FRA), 2006, had been rejected following a three-tier process.

- Later, the SC temporarily put on hold the eviction by an order on February 28, giving state governments time to file affidavits on whether due process was followed before claims were rejected.
- On July 24, the Centre and states are expected to file affidavits regarding the implementation of the FRA.

Who are the petitioners, and what is their contention?

- The petitioners are Wildlife First, Nature Conservation Society, and Tiger Research and Conservation Trust.
- They contend that the protection of forests has been severely affected due to bogus claims under the FRA, and that the bogus claimants continue to occupy large areas of forest lands, including inside national parks and sanctuaries, despite their applications being rejected under the appeals process of the FRA.

Rashtriya Aajeevika Mission

Why in news?

The Ministry of Rural Development is implementing Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM) across the country in a mission mode with the objective of organizing the rural poor women into Self Help Groups (SHGs), and continuously nurturing and supporting them to take economic activities till they attain appreciable increase in income over a period of time to improve their quality of life and come out of abject poverty.

Salient features

- Under DAY - NRLM programme, Revolving Funds (RF) at the rate of Rs.10,000-15,000 per SHG and Community Investment Fund (CIF) to the extent of Rs.2,50,000 per SHG is provided to Self Help Groups (SHGs) and their federations to take up self-employment for income generation and livelihoods activities.
- Apart from this DAY-NRLM also facilitates credit mobilisation for SHGs in the form of bank loans.
- In order to reduce the effective cost of bank credit to women SHGs, DAY-NRLM is providing interest subvention to SHGs on loans from banks from FinancialYear 2013-14.

- In addition, capacity building and technological support is also provided to the target households for taking up income generating activities both in farm and non-farm sectors.

DAY-NRLM has following sub-schemes focussing on self-employment of the rural poor:

- **Rural Self Employment Training Institutes (RSETIs)**, enabling a trainee to take bank credit and start his/her own Micro-enterprise.
- Under RSETIs, opportunities are being made available to rural women by way of skill training with Entrepreneurship Development Programme (EDP) inputs to start self-employment ventures.
- **Start-up Village Entrepreneurship Programme (SVEP)** for facilitating the rural poor for setting up of micro Enterprises. Under SVEP 53,084 entrepreneurships have been set up upto 31st May, 2019.
- **Aajeevika Grameen Express Yojana (AGEY)** to facilitate transport facilities in the rural areas which also provides self employment opportunities to the rural poor. Under AGEY 730 Vehicles are operational as on 31st May, 2019.

Cancer in India:

The projected cancer cases were computed using projected incidence rates and population (person-years), said a note to the table annexed by the government to its reply.

What does data says?

- Uttar Pradesh and Maharashtra, the country's most and second-most populous states, also recorded the highest incidence of cancer by absolute numbers in the three years between 2016 and 2018,
- The estimated incidence of cancer cases (for both men and women) in Uttar Pradesh were 2,45,231; 2,57,353; and 2,70,053 for the years 2016, 2017, and 2018 respectively.
- The corresponding numbers for Maharashtra were 1,32,726; 1,38,271; and 1,44,032. Among the lowest estimated incidence was seen in Haryana and Assam, the smaller among the major states.
- The projected cancer cases were computed using projected incidence rates and population (person-years), said a note to the table annexed by the government to its reply.
- The absolute numbers suggested the fastest year-on-year increase in the incidence of cancer was estimated for Bihar (5.38% from 2016 to

2017, and 5.37% from 2017 to 2018), the country's third most populous state as per the 2011 Census.

Steps taken by govt

- The Health Ministry's reply said the central government was "implementing Strengthening of Tertiary Care Cancer facilities scheme to support setting up of State Cancer Institutes (SCI) and Tertiary Care Cancer Centres (TCCC) in different parts of the country".

Dengue and Rainfall:

Mumbai registered its first dengue death this year with 32-year-old Mulund resident on July 20. Health officials are seeing a surge in the viral infection, transmitted by Aedes Aegypti mosquito. The mosquito-borne infection has successively risen in the last few years in Mumbai.

What is dengue?

Dengue is a mosquito-borne viral infection that peaks from Monsoons every year. In Mumbai, the cases have risen from 919 in 2015 to 1003 in 2018. In the same period, the suspected dengue cases significantly rose from 12,447 to 14,110.

This year already 71 dengue cases have been confirmed by the BMC till July 14.

Role of weather

- Unlike malaria mosquito (Anopheles) that breeds in water accumulating in open areas, Aedes aegypti mosquito breeds in freshwater in the peri-domestic atmosphere, meaning petri
- The dishes, under refrigerator plates, water containers, on sagged tarpaulin sheets, in households. The mosquito's reach to human beings becomes closer.
- During heavy rainfall, water continuously accumulates and gets washed away, thus sweeping away any mosquito larvae.
- In Mumbai, however, the last fortnight has seen a dry spell, forcing rainwater to remain stagnant.
- This kind of weather is best suited for mosquitoes to breed and multiply. "The mosquito's life cycle is 7-8 days, to grow from larvae to adult stage.
- With the dry spell, the water is not washed away and remains stagnant allowing the larvae to develop into an adult mosquito,).

Situation in India

- Dengue is prevalent in Maharashtra, Gujarat, Rajasthan towards west, Delhi, Harayana, Punjab in north, West Bengal towards east and most of southern India. Till May 26, 2019, 5,504 dengue cases have been recorded by the National Vector Borne Disease Control Programme (NVBDCP).
- In 2018, provisional records show 172 people died due to dengue and 1.01 lakh people were infected. Punjab (14,980), Maharashtra (11,011) and Gujarat (7,579) accounted for maximum cases.
- “The reason for these states to have higher cases is not only weather but also infrastructure to confirm dengue diagnosis. Maharashtra has 42 laboratories that help in more case detection,” Jagtap said.
- This year, 23,000 samples have already been screened for dengue virus.

Inter-State River Water Disputes (Amendment) Bill, 2019

Why in news?

The Inter-State River Water Disputes (Amendment) Bill, 2019 seeks to amend the Inter State River Water Disputes Act, 1956 to streamline the adjudication of inter-State river water disputes.

Salient features

- A key feature of the Bill is the constitution of a single tribunal with different benches, and the setting of strict timelines for adjudication.
- Benches will be set up under the single tribunal. A retired Supreme Court judge will head the tribunal.
- There will be benches formed as and when required. The benches though will be wound up once a dispute is resolve, sources said. The 2017 Bill could not get parliamentary nod.
- The tribunal will be mandated to deliver final award in two years and it is proposed that whenever it gives order, the verdict gets notified automatically, the sources said.
- As per the current provisions of the 1956 Act, a tribunal can be formed after a State government approaches the Union government with such a request and the Centre is convinced of the need to form the tribunal.
- At present, there are nine Tribunals including those on Cauvery, Mahadayi, Ravi and Beas, Vansadhara and Krishna rivers.

Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)

Why in news?

Under Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP), a total of 5440 dedicated retail outlets selling affordable generic medicines are functional in the country as on 15.07.2019.

About PMBJP:

- 'Pradhan Mantri Bhartiya Janaushadhi Pariyojana' is a campaign launched by the Department of Pharmaceuticals, Govt. Of India, to provide quality medicines at affordable prices to the masses through special kendra's known as Pradhan Mantri Bhartiya Jan Aushadhi Kendra.
- Pradhan Mantri Bhartiya Jan Aushadhi Kendra (PMBJK) have been set up to provide generic drugs, which are available at lesser prices but are equivalent in quality and efficacy as expensive branded drugs.
- Bureau of Pharma PSUs of India (BPPI) is the implementing agency of PMBJP. BPPI (Bureau of Pharma Public Sector Undertakings of India) has been established under the Department of Pharmaceuticals, Govt. of India, with the support of all the CPSUs.

SALIENT FEATURES OF THE SCHEME:

- Ensure access to quality medicines.
- Extend coverage of quality generic medicines so as to reduce the out of pocket expenditure on medicines and thereby redefine the unit cost of treatment per person.
- Create awareness about generic medicines through education and publicity so that quality is not synonymous with only high price.
- A public programme involving Government, PSUs, Private Sector, NGO, Societies, Co-operative Bodies and other Institutions.
- Create demand for generic medicines by improving access to better healthcare through low treatment cost and easy availability wherever needed in all therapeutic categories.

What is a generic medicine?

- There is no definition of generic or branded medicines under the Drugs & Cosmetics Act, 1940 and Rules, 1945 made thereunder. However, generic medicines are generally those which contain same amount of same active ingredient(s) in same dosage form and are intended to be administered by the same route of administration as that of branded medicine.
- The price of an unbranded generic version of a medicine is generally lower than the price of a corresponding branded medicine because in

case of generic version, the pharmaceutical company does not have to spend money on promotion of its brand

Migration in India

A report

Census 2011 data on migration released last week show Maharashtra had more migrants from Madhya Pradesh than from Bihar, and Gujarat had almost double the number of migrants from Rajasthan than from Bihar.

Details

- Data from Delhi show only 2,321 persons declared Bangladesh as their last place of residence. Over 1.17 lakh said Pakistan — not surprising given the history of Partition.
- The data come at a time when migration is a major phenomenon across the world, and “illegal Bangladeshis” is a hot-button political issue in India.
- The data are also very late — it’s almost time for Census 2021 — and do not reflect the current situation.
- Over 45.58 crore Indians were found to be “migrants” for various reasons during the enumeration exercises of Census 2011. The previous Census (2001) had recorded the number of migrants at 31.45 crore — more than 30% lower than the 2011 figure.

Who is migrant?

- According to the website of the Registrar General & Census Commissioner, India, “When a person is enumerated in Census at a different place than his/her place of birth, she/he is considered a ‘migrant’.”
- Migration data began to be collected with the Census of 1872, but was not very detailed until 1961. Changes introduced in 1961 continued until 2001; in the Census of 2011, a more detailed format for collecting information on migrants was adopted.

What data from Census 2011 show on migrations

- Marriage and employment are the major reasons for migration, Census data show. The bulk of the migration takes place within individual states — out of the total number of persons registered as “migrants” in the 2011 Census, only 11.91% (5.43 crore) had moved to one state from another, while nearly 39.57 crore had moved within their states.

Women representation in Parliament

why in news?

The Global Gender Gap report for 2018 said that the widest gender disparity is in the field of political empowerment. To cite the Inter-Parliamentary Union 2018 report, women legislators account for barely 24% of all MPs across the world.

However, the experience of the top-ranked countries in the IPU list does give an indication of how women's presence in political spaces took an upward turn in those nations.

What is global scenario?

- Rwanda, a landlocked nation with a population of 11.2 million, tops the list, with 61.3% seats in the Lower House and 38.5% in the Upper House occupied by women.
- Since 2003, the country has implemented a legislated quota of 30% in all elected positions, which has enabled a steady inflow of women parliamentarians after successive elections
- . Its Constitution has also set a quota of 30% in all elected offices.
- However, some believe that the higher representation of women in the country cannot be attributed solely to quotas — women were thrust into the political limelight due to the huge vacuum that emerged in the aftermath of the 1994 genocide, which resulted in a large chunk of the country's male population getting killed.
- Cuba, the largest Caribbean island nation with a population of about 11.1 million, holds the second rank, with 53.2 % seats of its 605-member single House being occupied by women representatives.
- Sweden, the fifth-rank holder in the IPU, has a professedly feminist government and has maintained a women's parliamentary representation of at least 40% since 90s. The 349-member single House, Swedish Parliament, now has 161 women with 46.1% representation.
- Sweden does not have any constitutional clause or electoral law earmarking representation for women in elected bodies.
- The issue of compulsory gender quota didn't find favour in Sweden as it was believed that such a quota will create reverse discrimination and violate the principles of equal opportunities.

- Almost all political parties there have adopted measures to ensure a fair representation for women at all levels. In 1993, the Social Democratic Party adopted the ‘zipper system’, described as “a gender quota system whereby women and men are placed alternately on all party lists.” This further boosted women’s seat share.

Nepal’s example

- Closer home, Nepal occupies the 36th position in the IPU and its 275-member Lower House has 90 women, about 32.7% of the total strength.
- The Nepal Constitution stole a march over many others in the South Asia by earmarking 33% seats for women in all state institutions, including the legislature.

India’s status

- India, at 149 among the 192 countries in the IPU list, had barely 11.8% women’s representation in the 16th Lok Sabha, which improved to 14.5% in the current Lower House. At least seven out of the 29 States have not sent a single woman MP.
- The 108th Constitutional Amendment Bill stipulating 33% quota for women in the Parliament and in State Assemblies remains in political cold storage.
- The system of voluntary party quotas, which has worked well in many countries, is not likely to cut much ice in India’s deeply embedded patriarchal society.
- As has happened in the case of panchayats and municipalities, only a legally mandated quota could perhaps ensure a large-scale entry of Indian women into the higher echelons of political power.

National Creche Scheme:

Context:

National Crèche Scheme is being implemented as a Centrally Sponsored Scheme through States/UTs with effect from 01.01.2017.

About National Creche Scheme:

- The Scheme is being implemented by the Ministry of Women and Child Development.
- It is a centrally sponsored scheme.
- It aims at providing a safe place for mothers to leave their children while they are at work, and thus, is a measure for empowering women as it enables them to take up employment.

Coverage: It is an intervention towards protection and development of children in the age group of 6 months to 6 years.

Features:

- Provides for day care facilities to the children of working mothers.
- Provides supplementary nutrition, health care inputs like immunization, polio drops, basic health monitoring, sleeping facilities, early stimulation (for children below 3 years), pre-school education for children aged between 3-6 yrs.

Significance:

- This scheme facility enables the parents to leave their children while they are at work and where the children are provided with a stimulating environment for their holistic development.
- This scheme ensures to improve the health and nutrition status of the children.
- It promotes physical, social, cognitive and emotional/holistic development of the children.
- It also educates and empowers parents/caretakers for the better childcare.
- The scheme is being structurally revised with the enhanced financial norms, stringent monitoring and sharing pattern between the Government of India and the implementing agencies and NGOs.

Eligibility Criteria:

- The State Government, Voluntary Institutions, Mahila Mandals with the know report of service in the field of child welfare department and registered under the Societies Registration Act, 1860 or registered as a Public Trust at least for the period for last 2 years are eligible for applying for the financial assistance from the fund.

Fund sharing:

- The fund sharing pattern under National Creche Scheme amongst Centre, States/UTs & Non Governmental Organisations/Voluntary Organisations for all recurring components of the scheme is in the ratio of 60:30:10 for States, 80:10:10 for North Eastern States and Himalayan States and 90:0:10 for UTs.

Tiger survey

Why in news?

The four-year tiger census report, Status of Tigers in India, 2018, released by Prime Minister Narendra Modi on Monday, shows numbers of the big cat have increased across all landscapes.

Salient observation of report

- The total count has risen to 2,967 from 2,226 in 2014 — an increase of 741 individuals (aged more than one year), or 33%, in four years.
- This is by far the biggest increase in terms of both numbers and percentage since the four-yearly census using camera traps and the capture-mark-recapture method began in 2006.
- The number that year was 1,411; it rose by 295 (21%) to 1,706 in 2010; and by 520 (30%) to 2,226 in 2014.
- Tiger numbers are always projected in a range — 2,967, is the mean of an estimated range of 2,603 to 3,346.
- The 2018 figure has a great degree of credibility because, according to the report, as many as 2,461 individual tigers (83% of the total) have actually been photographed by trap cameras. In 2014, only 1,540 individuals (69%) were photographed.
- The report does not contain numbers of other predators like leopards. But better tiger numbers are generally seen as indicating good prey bases and habitat.

Why is a tiger census needed?

- The tiger sits at the peak of the food chain, and its conservation is important to ensure the well-being of the forest ecosystem.
- The tiger estimation exercise includes habitat assessment and prey estimation.
- The numbers reflect the success or failure of conservation efforts.
- This is an especially important indicator in a fast-growing economy like India where the pressures of development often run counter to the demands of conservation.

- The Global Tiger Forum, an international collaboration of tiger-bearing countries, has set a goal of doubling the count of wild tigers by 2022. More than 80% of the world's wild tigers are in India, and it's crucial to keep track of their numbers.

Where has the tiger population increased the most?

- The biggest increase has been in Madhya Pradesh — a massive 218 individuals (71%) from 308 in 2014 to 526. In Maharashtra, the number has gone up from 190 to 312 (64%), and in Karnataka, from 406 to 524 (118, or 29%). Uttarakhand has gained over 100 tigers (340 to 442; 30%)
- However, since tigers keep moving between states, conservationists prefer to talk about tiger numbers in terms of landscapes. India's five tiger landscapes are: Shivalik Hills and Gangetic Plains, Central Indian Landscape and Eastern Ghats, Western Ghats, North-East Hills and Brahmaputra Plains, and the Sundarbans.

Which states/regions have done badly?

- Only one of the 20 tiger-bearing states has seen a fall in numbers — Chhattisgarh, where the census counted 19 tigers, significantly fewer than the 46 of 2014.
- The report has cited law and order as the reason — large parts of the state are hit by the Maoist insurgency.
- Greater conservation efforts are needed in the “critically vulnerable” Northeast hills and Odisha.
- No tiger has been found in the Buxa, Palamau and Dampa reserves.

How were the estimates reached?

- The census was carried out in four phases. Phases 1 and 2 covered forest beats, generally spread over 15 sq km each, by Forest Departments, to collect signs of tiger presence like scat and pugmarks.
- Enumerators walked paths called line transects to estimate the abundance of prey.
- This was followed by sampling of plots along the transects to assess habitat characteristics, human impact, and prey dung density.
- In phase 3, the information was plotted on the forest map prepared with remote-sensing and GIS application. Sample areas were divided in 2-sq-km parcels, and trap cameras were laid in these grids.

- In the last phase, data were extrapolated to areas where cameras could not be deployed.
- Authorities say the census is the world's most extensive biodiversity mapping exercise.
- A total 3,81,400 sq km of forests were surveyed; 5,22,996 km on foot. 3,17,958 habitat plots were sampled for vegetation and prey dung.
- There were 26,838 camera trap locations, which covered 1,21,337 sq km.

So, why have the numbers gone up?

- The success owes a lot to increased vigilance and conservation efforts by the Forest Department.
- From 28 in 2006, the number of tiger reserves went up to 50 in 2018, extending protection to larger numbers of tigers over the years.
- Healthy increases in core area populations eventually lead to migrations to areas outside the core; this is why the 2018 census has found tigers in newer areas.
- Over the years, there has been increased focus on tigers even in the areas under the territorial and commercial forestry arms of Forest Departments.
- The brightest spot in the non-protected tiger-bearing areas is the Brahmapuri division of Chandrapur district of Maharashtra, which has more than 40 tigers.
- The other important reason is increased vigilance, and the fact that organised poaching rackets have been all but crushed. According to Nitin Desai of Wildlife Protection Society of India, there has been no organised poaching by traditional gangs in Central Indian landscapes since 2013.
- The increased protection has encouraged the tiger to breed. According to Wildlife Institute of India Director V B Mathur, tigers are fast breeders when conditions are conducive.
- The rehabilitation of villages outside core areas in many parts of the country has led to the availability of more inviolate space for tigers.

Also, because estimation exercises have become increasingly more accurate over the years, it is possible that many tigers that eluded enumerators in earlier exercises were counted this time.

Consumer Protection Bill, 2019

Why in news?

The Lok Sabha today passed the Consumer Protection Bill 2019 after due consideration and discussion.

Union Minister for Consumer Affairs, Food and Public Distribution Shri Ram Vilas Paswan said that the bill aims at protecting the interests of consumers by establishing authorities for timely and effective administration and settlement of consumers' dispute.

Salient Features of the Bill

1. **Central Consumer Protection Authority (CCPA)**: Executive Agency to provide relief to a class of consumers. The CCPA will be empowered to-

2. Simplified Dispute Resolution process

i) Pecuniary Jurisdiction enhanced to- District Commission –Up to Rs1 crore

State Commission- Between Rs1 crore and Rs 10 crore National Commission – Above Rs.10 crore

ii) Deemed admissibility after 21days of filing

iii) Empowerment of Consumer Commission to enforce their orders

iv) Appeals only on question of law after second stage

v) Ease of approaching consumer commission

3. Mediation

- An Alternate Dispute Resolution (ADR) mechanism
- Reference to Mediation by Consumer Forum wherever scope for early settlement exists and parties agree for it.
- Mediation cells to be attached to Consumer Forum
- No appeal against settlement through mediation

4. Product Liability

- A manufacturer or product service provider or product seller to be responsible to compensate for injury or damage caused by defective product or deficiency in services
- Presently Consumer only have a single point of access to justice, which is time consuming. Additional swift executive remedies are proposed in the bill through Central Consumer Protection Authority (CCPA)

5. Deterrent punishment to check misleading advertisements and adulteration of products

Unlawful Activities Prevention Amendment (UAPA) Bill

Why in news?

The Unlawful Activities Prevention Amendment (UAPA) Bill is an anti-terror legislation that seeks to designate an individual as a “terrorist”.

Who is a “terrorist” in the Bill?

- The words “terror” or “terrorist” are not defined, but the UAPA Bill in Section 15 defines a “terrorist act” as any act committed with intent to threaten or likely to threaten the unity, integrity, security, economic security, or sovereignty of India or with intent to strike terror or likely to strike terror in the people or any section of the people in India or in any foreign country.
- The original Act dealt with “unlawful” acts related to secession; anti-terror provisions were introduced in 2004.
- The Bill seeks to empower the central government to designate an individual a “terrorist” if they are found committing, preparing for, promoting, or involved in an act of terror.
- A similar provision already exists in Part 4 and 6 of the legislation for organisations that can be designated as a “terrorist organisation”.

How are individuals declared terrorists?

- The central government may designate an individual as a terrorist through a notification in the official gazette, and add his name to the schedule supplemented to the UAPA Bill.
- The government is not required to give an individual an opportunity to be heard before such a designation.
- At present, in line with the legal presumption of an individual being innocent until proven guilty, an individual who is convicted in a terror case is legally referred to as a terrorist, while those suspected of being involved in terrorist activities are referred to as terror accused.
- The Bill does not clarify the standard of proof required to establish that an individual is involved or is likely to be involved in terrorist activities.

What happens when an individual is declared a terrorist?

- The designation of an individual as a global terrorist by the United Nations is associated with sanctions including travel bans, freezing of assets and an embargo against procuring arms.
- The UAPA Bill, however, does not provide any such detail.
- The Bill also does not require the filing of cases or arresting individuals while designating them as terrorists. According to Home Ministry officials, the consequences will be prescribed in the Rules supplemented to the law once the amendment Bill is passed.
- The Bill also seeks to give the central government the power to remove a name from the schedule when an individual makes an application. The procedure for such an application and the process of decision-making will also be decided by the central government.
- If an application filed by an individual declared a terrorist is rejected by the government, the Bill gives him the right to seek a review within one month after the application is rejected.
- Under the amendment Bill, the central government will set up the review committee consisting of a chairperson (a retired or sitting judge of a High Court) and three other members. The review committee will be empowered to order the government to delete the name of the individual from the schedule that lists “terrorists”, if it considers the order to be flawed.
- Apart from these two avenues, the individual can also move the courts challenging the government’s order.

What are the other major changes proposed in the UAPA Bill?

- The existing UAPA law requires an investigating officer to take prior permission of the Director General of Police of a state for conducting raids, and seizing properties that are suspected to be linked to terrorist activities.
- The amendment Bill, however, removes this requirement if the investigation is conducted by an officer of the National Investigation Agency (NIA).
- The investigating officer, under the Bill, only requires sanction from the Director General of NIA.
- Central agencies such as the Central Bureau of Investigation (CBI) are required to obtain prior permission from the state government since law and order is a state subject under the Constitution.
- The existing UAPA law specifies that only officers of the rank of Deputy Superintendent or Assistant Commissioner of Police of the NIA shall have the power to investigate offences under the UAPA law.

- The Bill seeks to allow NIA officers of Inspector rank to carry out investigations.

GS-3

Mauritius Leaks

Why in news?

At the heart of the 18-country collaborative investigation by the International Consortium of Investigative Journalists (ICIJ) and The Indian Express are data from Conyers Dill & Pearman.

What are the Mauritius Leaks?

- After Swiss Leaks, Panama Papers and Paradise Papers, over 200,000 emails, contracts and bank statements leaked from Mauritius show how the island nation was used by a long list of corporates to facilitate partnerships with multinationals and, without paying any capital gains tax, remit profits as Foreign Direct Investment (FDI) to India.
- At the heart of the 18-country collaborative investigation by the International Consortium of Investigative Journalists (ICIJ) and The Indian Express are data from Conyers Dill & Pearman, an offshore specialist law firm with several Fortune 500 companies as clients, which started operations in 1928 from Bahamas — and in 2009 from Mauritius for investments being routed to Africa and Asia.

What is Conyers Dill & Pearman, the company at the centre of the leaks?

- In 1998, Bermuda-based financial analyst Roger Crombie described the company in his book as a “full-service” law firm with an emphasis on corporate and commercial law, and offering property, trust and management services to companies and individuals.
- The firm’s three founders — James Reginald Conyers, Nicholas Bayard Dill and James Eugene Pearman — were all knighted and held public positions in Bermuda.
- Over the decades, its Private Client department helped individuals minimise their exposure to taxation, and protect family assets, through various Trust structures.
- The company opened offices across the world — in Guernsey, Cayman Islands, Hong Kong, London and the British Virgin Islands (BVI) — with

offshore entities incorporated at these sites under an affiliate company, the Codan Trust.

Why is the Mauritius connection important?

- Conyers Dill & Pearman was among those who benefitted in the decades when there were tax breaks for companies and corporations routing their investments to India via Mauritius, among other offshore destinations.
- In 2016, India amended its Double Taxation Avoidance Agreement (DTAA) with Mauritius, and the new provisions — capital gains tax, instance — are now fully applicable.
- “The challenges include the recent changes made to the double taxation avoidance agreement between Mauritius and India, which has brought uncertainty to the market. Furthermore, the advent of GAAR (General Anti Avoidance Rule) in India... and CRS (Common Reporting Standard) across major financial centers are bringing the Mauritius corporate structure under more scrutiny.”

What did the law firm do in Mauritius before the treaty was amended?

- It offers to set up funds, supply local directors, registered local offices, secretarial and administrative services, and assist in bank account opening/government filing.
- A power-point presentation of the firm, which is part of the leaks, claims that it can set up a GBC1 (Global Business Company, tax resident in Mauritius) within 10 working days for an annual licence fee of \$1,750. It points out that companies registered in Mauritius had to pay an effective income tax slab not exceeding 3% and no capital gains tax.
- The presentation notes: “We act on a large number of inward and outward investment transactions involving India and Africa (as well as other jurisdictions) and are notably established in the traditional markets that invest in India and Mauritius.”
- It offers attractive “tax benefits and favorable fiscal regime” from Mauritius. They claim to introduce clients and companies to a “low/zero tax regime” where no capital gains tax would be payable in Mauritius.
- Mauritius leaks, black money, tax evasion, Mauritius, ICIJ, Religare, tax, tax haven, offshore black money, Swiss Leaks, Panama Papers, Paradise papers, Mauritius tax haven, Indian Express, Express Investigation,

What are some of the “transactions” listed by the firm in the leaks?

* Advised Vodafone Group plc on its \$5.46 billion acquisition of a 33% stake in Vodafone Essar Ltd, a joint venture between Vodafone and Essar.

* Advised on the formation of two Mauritius-domiciled investment funds (with a Swiss Bank as manager), which are both investing in India, in listed securities and fixed income products.

* Advised a leading venture capital fund on restructuring its India-focused funds, which are domiciled in Mauritius and the Cayman Islands, and advising on the formation of new funds.

How did the tightening of rules in India affect the firm?

- Leaked data show that before countries like India decided to rein in tax treaty benefits to increase their own tax base, bankers and companies like Conyers Dill & Pearman raised red flags over tightening regulations and compliance.
- One leaked letter, received by Ashvan Luckraz, lists the concerns of several members of the Association of Trust & Management Companies of Mauritius. One member notes how banks like HSBC and Standard Chartered have removed non-profitable account holders for “compliance reasons”.

New butterfly species

Context

Members of a Nilgiris-based conservation group spotted two butterflies, usually found in the Devala-Nadugani belt, in the Kotagiri slopes, where they are rarely seen.

About the butterflies

- These two butterflies are seen in the Nilgiris and in other parts of the Western Ghats in usually evergreen forests. Seeing them in Kotagiri could be an indicator that their host plants are doing well here, leading to their range being extended to these slopes,” said Mr. Sethumadhavan.
- The WBA members spotted multiple individuals of the Dark Pierrot and the Pointed Lineblue, indicating that they were not stragglers who accidentally found their way to the Kotagiri slopes, he added.

- “Of course, we also need to consider that multiple variables are at play, and further studies need to be done to arrive at any conclusions about the expansion of their home ranges,” he added.

Global Innovation Index 2019

Why in news?

India has jumped five places to rank 52 in the Global Innovation Index 2019, up from the 57 it had in last year’s rankings.

Earlier Performance

- India’s rise in the rankings has been a consistent trend over the last few years. It had ranked 81 in 2015, which rose to 66 in 2016, 60 in 2017 and 57 in 2018.
- “The performance improvement of India is particularly noteworthy,” the report, brought out by the UN World Intellectual Property Organisation, INSEAD and CII, said.

Most innovative

- “India continues to be the most innovative economy in central and southern Asia — a distinction held since 2011 — improving its global rank to 52 in 2019.
- “India is consistently among the top in the world in innovation drivers such as ICT services exports, graduates in science and engineering, the quality of universities, gross capital formation — a measure of economy-wide investments — and creative goods exports,” the report added.
- The report also highlighted that India stands out in the world’s top science and technology clusters, with Bengaluru, Mumbai, and New Delhi featuring among the top 100 global clusters.
- “Given its size — and if progress is upheld — India will make a true impact on global innovation in the years to come.
- Commerce Minister Piyush Goyal, who released the report, said that India’s hope of increasing the size of the economy to \$5 trillion cannot happen without significant innovation.

Sovereign bonds

Why in news?

In her maiden Budget speech earlier in this month, Finance Minister Nirmala Sitharaman announced something that no previous FM had done. She said

that the Indian “government would start raising a part of its gross borrowing programme in external markets in external currencies”. According to most reports, this type of borrowing is likely to start by October with the initial amount of \$10 billion.

What exactly are sovereign bonds?

- A bond is like an IOU. The issuer of a bond promises to pay back a fixed amount of money every year until the expiry of the term, at which point the issuer returns the principal amount to the buyer.
- When a government issues such a bond it is called a sovereign bond.
- Typically, the more financially strong a country, the more well respected is its sovereign bond.
- Some of the best known sovereign bonds are the Treasuries (of the United States), the Gilts (of Britain), the OATS (of France), the Bundesanleihen or Bunds (of Germany) and the JGBs (of Japan).

And what is the controversial part?

- The current controversy relates to India’s sovereign bonds that will be floated in foreign countries and will be denominated in foreign currencies.
- In other words, both the initial loan amount and the final payment will be in either US dollars or some other comparable currency.
- This would differentiate these proposed bonds from either government securities (or G-secs, wherein the Indian government raises loans within India and in Indian rupee) or Masala bonds (wherein Indian entities — not the government — raise money overseas in rupee terms).

So, why is India borrowing in external markets in external currency?

- Possibly the biggest of these is that the Indian government’s domestic borrowing is crowding out private investment and preventing the interest rates from falling even when inflation has cooled off and the RBI is cutting policy rates.
- If the government was to borrow some of its loans from outside India, there will be investable money left for private companies to borrow; not to mention that interest rates could start coming down.

- Moreover, at less than 5%, India's sovereign external debt to GDP is among the lowest globally. In other words, there is scope for the Indian government to raise funds this way without worrying too much about the possible negative effects.
- Thirdly, a sovereign bond issue will provide a yield curve — a benchmark — for Indian corporates who wish to raise loans in foreign markets.
- This will help Indian businesses that have increasingly looked towards foreign economies to borrow money.
- Lastly, the timing is great. Globally, and especially in the advanced economies where the government is likely to go to borrow, the interest rates are low and, thanks to the easy monetary policies of foreign central banks, there are a lot of surplus funds waiting for a product that pays more.
- In an ideal scenario, it could be win-win for all: Indian government raises loans at interest rates much cheaper than domestic interest rates, while foreign investors get a much higher return than is available in their own markets.

Then why are so many cautioning against this move?

- The biggest potential fly in the ointment is the element of risk that comes into the picture when a government borrows in foreign markets and in foreign currency.
- As N R Bhanumurthy and Kanika Gupta (both of NIPFP) have shown recently, the volatility in India's exchange rate is far more than the volatility in the yields of India's G-secs (the yields are the interest rate that the government pays when it borrows domestically).
- This means that although the government would be borrowing at "cheaper" rates than domestically, the eventual rates (after incorporating the possible weakening of rupee against the dollar) might make the deal costlier.
- Rajan has also questioned the assumption that borrowing outside would necessarily reduce the number of government bonds the domestic market will have to absorb.
- That's because if fresh foreign currency comes into the economy, the RBI would have to "neutralise" it by sucking the exact amount out of the money supply.
- This, in turn, will require selling more bonds. If the RBI doesn't do it then the excess money supply will create inflation and

push up the interest rates, thus disincentivising private investments.

- Lastly, based on the unpleasant experience of other emerging economies, many argue that a small initial borrowing is the thin end of the wedge.
- It is quite likely that the government will be tempted to dip into the foreign markets for more loans every time it runs out of money.
- At some point, especially if India does not take care of its fiscal health, the foreign investors will pull the plug on fresh investments, creating dire consequences for India.

Formation of Milky way

Why in news?

The Milky Way, home to our sun and billions of other stars, merged with another smaller galaxy in a colossal cosmic collision roughly 10 billion years ago, scientists said on Monday based on data from the Gaia space observatory.

How did it happen?

- The union of the Milky Way and the so-called dwarf galaxy Gaia-Enceladus increased our galaxy's mass by about a quarter and triggered a period of accelerated star formation lasting about 2 to 4 billion years, the scientists said.
- Galaxies of all types, including the Milky Way, began to form relatively soon after the Big Bang explosion that marked the beginning of the universe some 13.8 billion years ago, but were generally smaller than those seen today and were forming stars at a rapid rate.
- Subsequent galactic mergers were instrumental in configuring galaxies existing now.
- Certain stars with higher content of elements other than hydrogen or helium arose in the Milky Way, they found, and others with lower such content originated in Gaia-Enceladus, owing to its smaller mass.
- While the merger was dramatic and helped shape the Milky Way, it was not a star-destroying calamity.

Distance between Galaxy

- The distances between stars in a galaxy are so huge — a galaxy is basically empty space — that the two galaxies intermix, change their

global shape, more star formation may happen in one, and maybe the small one stops forming stars.

Dragon tree in India:

Why in news?

Researchers discover *Dracaena cambodiana* in Assam's West Karbi Anglong dist.

Assam has added to India's botanical wealth a plant that yields dragon's blood — a bright red resin used since ancient times as medicine, body oil, varnish, incense and dye.

This is for the first time that a dragon tree species has been reported from India.

- ***About the tree***
- In India, the *Dracaena* genus belonging to the family Asparagaceae is represented by nine species and two varieties in the Himalayan region, the northeast and Andaman and Nicobar Islands. But *Dracaena cambodiana* is the only true dragon tree species, the study said.
- *Dracaena cambodiana* is an important medicinal plant as well as an ornamental tree. It is a major source of dragon's blood, a precious traditional medicine in China.
- Several antifungal and antibacterial compounds, antioxidants, flavonoids, etc., have been extracted from various parts of the plant.

Threats to tree

- "Recent overexploitation to meet the increasing demand for dragon's blood has resulted in rapid depletion of the plant. For this reason, the species is already listed in the inventory of Rare and Endangered Plants of China.
- The population size of the dragon tree species in Assam was estimated to be fewer than 50 mature individuals.
- "The habitat of the plant is severely fragmented due to open excavation of a stone quarry and there is continuing decrease in its area of occupancy and number of mature individuals," he said.
- The *Dracaena* seeds are usually dispersed by birds.
- But due to the large fruit size, only a few species of birds are able to swallow the fruits, thus limiting the scope of its natural conservation.
- The study advocates conservation programme for *Dracaena cambodiana* in view of its medicinal, ornamental and ecological values.

Global warning

Why in news?

While average global temperatures are currently around 1°C hotter than pre-industrial times, there have been a number of periods of cooling and warming over the centuries. This had led sceptics of manmade global warming to suggest that human activity is not the main driver of climate change.

Details of study

- Researchers used data compiled from nearly 700 temperature indicators — tree rings, sediment cores, coral reefs and modern thermometer readings — to provide a comprehensive timeline of the planet’s recent climate history.
- The findings are clear: at no point in modern human history did temperatures rise so quickly and so consistently as in the late 20th century — the period where the world’s post-war, fossil fuel-powered economy reached unprecedented heights of production and consumption.
- The study found that pre-industrial temperature fluctuations were largely driven by volcanic activity.
- But it also concluded that humans had never witnessed such rapid global warming as in the latter part of the 20th century.
- Commenting on the studies, Mark Maslin, Professor of Climatology at University College London, said their results “should finally stop climate change deniers claiming that the recent observed coherent global warming is part of a natural climate cycle”.

While average global temperatures are currently around 1°C hotter than pre-industrial times, there have been a number of periods of cooling and warming over the centuries. This had led sceptics of manmade global warming to suggest that human activity is not the main driver of climate change.

Tiger census

Why in news?

- The survey — divided into four phases — began last winter.
- India accounts for most of the 3,500-odd tigers that are scattered among Bangladesh, Bhutan, Cambodia, China, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Russian Federation, Thailand, and Vietnam.

The goal

- As part of an agreement in 2010 among these countries, there is a goal to double the global tiger count by 2022.

Concerns

- However, there have been doubts on tiger numbers by independent researchers. "...the claims of a 58% tiger population rise in India over the past 8 years [from 2006-2014] based on estimates from the three National Tiger Estimate surveys lack reliable scientific support," a research paper of the Centre for Wildlife Studies, Bengaluru; Bengaluru, claims.
- They say that a flawed methodology is being by the WII which exaggerates tiger numbers.

Crypto currency

An inter-ministerial committee (IMC) that was set up to assess the viability of virtual currencies has recommended that India should ban private cryptocurrencies such as Bitcoin.

An inter-ministerial committee (IMC) that was set up to assess the viability of virtual currencies has recommended that India should ban private cryptocurrencies such as Bitcoin. The detailed report of the IMC was submitted on February 28 but it was made public only on July 23. It is available on the Department of Economic Affairs' website.

What are virtual currencies?

- A virtual currency is a digital representation of value that can be digitally traded and functions as (a) a medium of exchange, and/ or (b) a unit of account, and/or (c) a store of value, but, unlike fiat currency like the rupee, it is not legal tender and does not have the backing of a government.
- A cryptocurrency is a subset of virtual currencies, and is decentralised, and protected by cryptography.

What are Distributed Ledger Technologies and Blockchain?

- Broadly speaking, this is how Distributed Ledger Technologies, and Blockchain, in particular, function.

- DLT refers to technologies that involve the use of independent computers (also referred to as nodes) to record, share, and synchronise transactions in their respective electronic ledgers.
- Keeping such distributed ledgers obviates the need for keeping the data centralised, as is done in a traditional ledger. All virtual currencies use DLT.
- A transaction under DLT essentially refers to the transfer of “value” from one to another.
- This “value” could be any record of ownership of assets — money, security, land titles — or the record of specific information such as information about one’s identity or health information, etc.
- That is why DLT has applications in several fields.

About block chain

- Blockchain is a specific kind of DLT that came to prominence after Bitcoin, a cryptocurrency that used it, became popular.
- Cryptocurrencies such as Bitcoin use codes to encrypt transactions and stack them up in blocks, creating Blockchains.
- It is the use of codes that differentiates cryptocurrencies from other virtual currencies.

What is the IMC’s view on DLT and cryptocurrencies?

- The first thing to understand is that the IMC recognises the potential of DLT and Blockchain.
- The IMC accepts that internationally, the application of DLT is being explored in the areas of trade finance, mortgage loan applications, digital identity management or KYC requirements, cross-border fund transfers and clearing and settlement systems.
- To that extent, it recommends the Department of Economic Affairs (within the Finance Ministry) to take necessary measures to facilitate the use of DLT in the entire financial field after identifying its uses.
- The IMC also recommends that regulators — RBI, SEBI, IRDA, PFRDA, and IBBI — explore evolving appropriate regulations for development of DLT in their respective areas.
- However, the IMC has recommended a ban on “private” cryptocurrencies

Why have private cryptocurrencies attracted a ban?

While it is true that the technology used in virtual currencies has immense potential, without a central regulating authority, they can have numerous downsides.

- The IMC's first concern is that non-official virtual currencies can be used to defraud consumers, particularly unsophisticated consumers or investors.
- Second, scaling up such a currency system over a large population would require crippling levels of energy resources.
- Currencies such as Bitcoin require humongous processing power. According to a report by the Bank of International Settlement, Bitcoin processing already uses as much energy as is used by Switzerland; it called this an environmental disaster.
- Third, the IMC is worried that if private cryptocurrencies are allowed to function as legal tender, the RBI would lose control over the monetary policy and financial stability, as it would not be able to keep a tab on the money supply in the economy.
- Fourth, the anonymity of private digital currencies make them vulnerable to money laundering and use in terrorist financing activities while making law enforcement difficult.
- Fifth, there is no grievance redressal mechanism in such a system, as all transactions are irreversible.

It is for these broad reasons that the IMC singled out private cryptocurrencies for a ban.

BS-VI emission norms

The story so far:

The Union Government, through an order dated September 16, 2016, mandated Bharat Stage VI (BS-VI) mass emission standards for various classes of motor vehicles throughout the country from April 1, 2020, leapfrogging BS-V. While this will lead to better air quality in the short term, it also means higher vehicle prices and costs. For the automobile industry, this has meant accelerated development of all related technologies and components and big investments.

What makes BS-VI fuels cleaner?

- As per Bureau of Indian Standards (BIS) norms for upgraded fuels, (IS: 2796 – petrol and IS: 1460 – diesel), sulphur content is reduced to 10 mg/kg max in BS-VI from 50 mg/kg under BS-IV.

- This key reduction in sulphur makes it possible to equip vehicles with better catalytic converters that capture pollutants.
- BS-VI confers several benefits, the most important of which is limits set on Particle Number (PN) for engines, a reference to direct injection engines that emit more particulates but are more efficient and release less carbon dioxide.
- Also, there are lower limits for hydrocarbons (HC) and nitrogen oxides (NOx) in diesel engines and lower Particulate Matter limits for both petrol and diesel engines.

What impact will it have on consumers?

- Prices are the biggest impact factor both for commercial and passenger vehicles under the BS-VI regime, with one industry research estimate putting the increase at up to ₹20,000 for petrol cars, ₹65,000 to ₹90,000 for diesel cars, going up to ₹2.25 lakh for heavy commercial vehicles.
- Even two wheelers, requiring fuel injection technology, will witness a price spike of ₹3,000 to ₹6,000.
- The giant scale of the shift needed to BS-VI can be gauged from the production base: the Society of Indian Automobile Manufacturers (SIAM) says the industry produced 30,915,420 vehicles ranging from two-wheelers to commercial vehicles in the year ended April 2019, with an annual growth of 6.26%.

What about the BS-IV vehicles already manufactured?

- Since there is no bar on the operation of existing vehicles beyond the cut-off date for BS-VI, that is, April 1, 2020, the inventory of personal and commercial vehicles will continue to be sold.
- This is significant for the commercial sector, which involves higher investments. After the deadline, however, all new vehicles sold must comply with BS-VI.
- A spike in sales of BS-IV vehicles is expected closer to the festival season, when buyer sentiment turns positive, and the industry prepares to liquidate its stock of soon-to-be obsolete vehicles.
- The outlook is unclear for heavy commercial vehicles due to recent changes that enable higher freight loading, and depressed demand for expansion.
- The availability of higher financing through banks after the move to recapitalise them, and higher liquidity in non-banking financial companies could also influence sales.

What will the shift mean?

- As of January 1 this year, there were 57,468 retail fuel outlets of the oil marketing companies across the country.
- Although BS-VI fuel was introduced in the national capital last year, and extended to some contiguous districts in neighbouring States, the release of the higher grade fuel in all the pumps in the country has to be simultaneous.
- The auto industry wants it done by February.
- The cost of upgrading refineries to produce the higher-quality fuel is estimated at between ₹25,000 crore and ₹30,000 crore.

State butterfly in Tamil Nadu

Why in news?

Tamil Nadu became the fifth State to declare a State butterfly and Tamil Yeoman bagged the distinction.

About the butterfly

- The medium-sized butterfly may not be considered very beautiful, but has many special attributes because of which it was chosen.
- One reason is the name.
- There are about five butterflies endemic to the Western Ghat that bear the prefix 'Tamil' in their names.
- But this particular species scored high as it is found in abundance across most parts of the State.
- Secondly, the word 'yeoman' is translated in Tamil as 'maravan', meaning warrior, which again gave the species an edge over the others.
- Another speciality of Tamil Yeoman is that the species, although endemic to the Western Ghats, can also be sighted in small numbers in the Eastern Ghats and in open country. Except for coastal areas, there are chances of sighting it in all other landscape.

Other states butterflies

- Tamil Nadu is the only State to choose a member of the Nymphalidae family, members of which are not considered attractive and colourful. Maharashtra (Blue Mormon), Kerala (Malabar Banded Peacock), Uttarakhand (Common Peacock) and Karnataka (Southern Birdwing),

have chosen from Swallow Tails, which are usually big and beautiful with bold patterns.

- “Maharashtra’s State butterfly Blue Mormon is also considered a pest for some food plants.
- Tamil Yeoman however, feeds only on wild plants found in the Western Ghats

AMBIS

Why in news?

On Monday, Maharashtra became the first state in the country to adopt a digital fingerprint and iris scanning system to aid police investigations.

What is it?

The system, Automated Multi-modal Biometric Identification System (AMBIS), will include portable systems to dust off and capture fingerprints from crime scenes.

So what does AMBIS do and how it will help the police in their investigation

- In 2015, when Indian authorities were alerted about the detention of gangster Chhota Rajan in Indonesia, the Mumbai Police rushed to put together a dossier of cases registered against him in the city.
- However, providing a record of his fingerprints from the 1980s would prove essential in gaining his custody, as per international protocol.
- That's when the need to digitise fingerprint records, numbering in crores, was felt.

The trial stage

- In 2017, the cyber department of the Maharashtra Police selected a French firm through tendering to provide both hardware and software for a unit comprising a computer, camera, and iris, fingerprint and palm scanners.
- Apart from scanning and permanently storing biometric data, the police also tops files of arrested persons with their photos.
- Before Monday's formal launch, the system was trailed at a select few police stations in Mumbai, which have seen an upgrade in technological infrastructure after the CCTV project and Crime and Criminal Tracking Network and System (CCTNS) were implemented.

- All the while, the cyber police department digitised over 6.5 lakh fingerprints recorded on paper from the 1950s onwards.

Future plans

- With Chief Minister Devendra Fadnavis announcing the project implementation across all 94 police stations in Mumbai, the next step is to roll it out in all 1160 police stations in the state's 42 police districts, 7 police ranges, 10 central jails, 12 police training centers, and 4 fingerprint bureaus.
- With the integration of the system with facial recognition from CCTV cameras, AMBIS has enabled the police to cross-reference to put faces to criminals whose fingerprints have been captured on paper over the decades apart from solving fresh crimes.

“RoboBee X-Wing

Why in news?

It is essentially a flying machine, which can flap its wings 120 times a second and is half the size of a paperclip, as a report in The Wired describes it.

Details

- In a recently published paper in Nature, researchers from the Harvard Microrobotics Laboratory in Cambridge have claimed to have made possible the “lightest insect-scale aerial vehicle so far to have achieved sustained, untethered flight.”
- The robot can sustain a flight for less than a second. Initially, the researchers called this lightest centimetre-sized vehicle, “RoboBee”, but with the current advancement which makes it possible for RoboBee to fly untethered, its name has been upgraded to, “RoboBee X-Wing”.
- Along with the electronics required to give RoboBee X-Wing its flight, the robot weighs 259 mg and uses 110-120 milliwatts of power using solar energy, matching the “thrust efficiency” of similarly sized insects such as bees.
- Much like aircraft, the robot is heavier than the air it displaces — a concept referred to as “heavier-than-air flight”. However, when objects become smaller, achieving a heavier-than-air flight becomes more complicated.

Significance

- Studying the mechanisms that insects use to flap their wings and navigate in the air is a matter of interest to biologists.
- Flapping-wing robots can help in addressing questions related to the evolution of flight, the mechanical basis of natural selection and environmental monitoring.

Others are interested in replicating these abilities to build a new array of machines.

Odisha Rasagola

Why in news?

A long drawn battle of ownership has come to a draw now with each State receiving a Geographical Indication (GI) tag for the syrupy sweet from their respective States.

Background

- The 'Odisha Rasagola' has been awarded the GI tag in July 2019.
- Back in November 2017, West Bengal has received the GI tag for its Rasgulla.
- Prior to which both States vehemently claimed the origin of the Indian sweet.
- The 'Odisha Rasagola', according to the application submitted to the Registrar of GI, is a sweet from the state of Odisha made of chhena (cottage cheese) cooked in sugar syrup, which is very soft to feel, is juicy and non-chewy in consistency and can be swallowed without teeth pressure.

LCU L-56

Why in news?

Indian Navy Ship LCU L-56, the sixth of the Landing Craft Utility (LCU) MK IV class ships, was commissioned into the Indian Navy .

Commissioning the ship, the Vice-Admiral congratulated the GRSE (Garden Reach Shipbuilders and Engineers) for being the first shipyard in the country to have built the 100th warship.

Benefits

- The induction of LCU 56 will add to maritime and HADR (Humanitarian Assistance and Disaster Relief) capability of ANC (Andaman Nicobar Command), as the ship will be deployed for multi-role activities such

as beaching operations, search and rescue missions, disaster relief operations, coastal patrol, and surveillance operations along the Andaman and Nicobar Group of Islands.

About the ship

- LCU 56 is an amphibious ship with its primary role being transportation and deployment of main battle tanks, armoured vehicles, troops and equipment from ship to shore.
- The ship would be administered and based in Port Blair under the NAVCC in ANC.
- With a displacement of 900 tonnes, the ship measures 62 metres in length and is fitted with two MTU diesel engines, which provide a sustainable speed of over 15 knots.
- The ship is equipped with the state-of-art equipment and is armed with two 30 mm CRN-91 guns manufactured by Ordnance Factory, Medak.
- The ship is manned by a team comprising four officers and 56 sailors and is also capable of carrying 150 troops.

Kodaikanal Malai Poondu

Why in news?

This particular garlic species is known for its medicinal and preservative properties

The Geographical Indications Registry has granted the Geographical Indication (GI) tag to Kodaikanal Malai Poondu (Kodaikanal Hill Garlic).

Details

- The application was made by the Department of Biotechnology, Mother Teresa Women's University and Tamil Nadu State Council for Science and Technology.

What is special about it?

- Also known by its scientific name *Allium Sativum*, this particular garlic is known for its medicinal and preservative properties.
- It has anti-oxidant and anti-microbial potential, which is attributed to the presence of higher amount of organosulfur compounds, phenols and flavonoids compared to other garlic varieties.
- It is grown in the Kodaikanal Hills, Dindugul district.

- Its usually white or pale yellow and each bulb weighs 20-30g on an average.

Cultivation of garlic

- According to the GI application, Kodaikanal Hill Garlic cultivation is done twice in a year, once around May and for second time in November depending upon the suitability of the climate.
- The hill altitude, the misty condition and the soil prevailing in the Kodaikanal region are responsible for its medicinal property and the long storage shelf life of the garlic.
- In India, garlic is planted as both kharif (June-July) and rabi (October-November) crop and it depends on the regions.
- It is planted as a rabi crop in Andhra Pradesh, Bihar, Haryana, Uttar Pradesh, Orissa, Punjab, Uttarakhand, Rajasthan, Bengal and hilly regions.
- It is both kharif and rabi crop in T.N., Karnataka, Maharashtra, Gujarat, Madhya Pradesh and Chhattisgarh.

About GI tag

- A GI tag indicates that the product originates from a definite territory in India and has unique characteristics or quality.
- Having a GI tag prevents unauthorised use of a registered Geographical Indication by others, boosts exports of Indian Geographical indications by providing legal protection and also enables seeking legal protection in other WTO member countries.
- Some of the examples of Geographical Indications in India include Basmati Rice, Darjeeling Tea, Kancheepuram silk saree, Alphonso Mango, Nagpur Orange and Kolhapuri Chappal.

TOI 270

Why in news?

It is the name of the dwarf star and the planetary system recently discovered by NASA's Transiting Exoplanet Survey Satellite (TESS).

About the star:

TOI 270 is about 73 light years away from Earth, and is located in the constellation Pictor.

Its members include the dwarf star, which is 40 per cent smaller than the Sun in size and mass, and the three planets or exoplanets (planets outside the solar system) that have been named TOI 270 b, TOI 270 c, and TOI 270 d.

These three planets orbit the star every 3.4 days, 5.7 days, and 11.4 days respectively.

What is TOI270b

- In this system, TOI 270 b is the innermost planet.
- Researchers expect it to be a rocky world about 25 per cent bigger than Earth. It is not habitable since it is located too close to the star — about 13 times closer than our Solar System’s Mercury is from the Sun.
- On the other hand, TOI 270 c and TOI 270 d are Neptune-like planets because their compositions are dominated by gases rather than rock.
- Planet d, which is suspected to have a rocky core covered by a thick atmosphere, offers a surface unfavourably warm for the existence of liquid water, thereby rendering the planet potentially uninhabitable.
- With further study and observations, researchers expect to find the composition of these planets, the presence of atmosphere in them and the kinds of gases they contain, etc.

Banning of Unregulated Deposit Schemes Bill, 2019

Why in news?

On July 29, the Rajya Sabha passed the Banning of Unregulated Deposit Schemes Bill, 2019. The Bill was introduced in the Lok Sabha on July 19 by Finance Minister Nirmala Sitharaman and aims to protect investors from fraudulent investment schemes, such as Ponzi schemes. The Bill covers previously existing gaps in legislation that had been exploited by various parties to siphon large amounts of money away from small investors.

Objectives

- In essence, all deposit schemes, with or without interest, except those regulated by the government, have been banned by the bill.
- Such schemes can result in great losses of capital when those who hold the deposit default on its repayment, as in the case of Pune’s D S Kulkarni Developers, who defaulted on the repayment of their deposits worth over Rs 1,000 crore after promising depositors high returns on their deposits.

How does Bill define deposits and deposit-takers?

- According to an analysis of the Bill by PRS India, deposits are defined as “an amount of money received through an advance, a loan, or in any other form, with a promise to be returned with or without interest”.
- The Bill excludes, among others, payments received in the form of a loan from relatives, and contributions towards capital made by partners in a partnership firm from this definition of deposits.
- The Bill defines a deposit-taker as the individual, group of individuals, or a company that is soliciting or receiving deposits.
- The provisions of the Bill make it so that in the event of prosecution, it is the deposit-taker who is liable to be prosecuted, and not those who made the deposits.

What are unregulated deposit schemes? What are Ponzi schemes?

- Under the Bill, deposit-taking schemes are defined as unregulated if they are undertaken for business purposes, and additionally, are not registered with one of the nine regulatory authorities, whom the Bill has made responsible for overseeing such deposit-taking schemes.
- A common type of scam involving unregulated deposits is the Ponzi scheme, a type of investment fraud wherein one party promises high returns on an investment with little to no risk.
- The early investors in a Ponzi scheme are repaid by the scheme acquiring new investors, and so on.
- Once there are no longer enough people to secure a new round of investments, the scheme collapses and the investors lose their money.

Which are the regulators overseeing deposit-taking schemes?

- There are nine authorities charged with the oversight and regulation of deposit-taking schemes, including the Reserve Bank of India (RBI), the Securities and Exchange Board of India (Sebi), the Ministry of Corporate Affairs (MCA), and state and union territory governments.
- Each authority oversees different types of deposit-taking schemes, with the RBI overseeing deposits taken by non-banking financial companies (NBFCs), and Sebi overseeing mutual funds.
- Any deposit-taking scheme must be registered with the relevant authority, based on the category it falls under, and only then is its operation legal.

What is the mechanism by which the Bill aims to combat unregulated deposit schemes?

- Under the provisions of the Bill, a competent authority will be appointed, with a rank not below secretary to the state or central government.
- The Bill gives this authority the power to provisionally attach (a protective measure to seize property) the property of the deposit-taker and all the deposits received by them.
- The Bill also allows the competent authority to summon and examine people to obtain evidence, and order records to be produced.
- Furthermore, the Bill provides for the formation of designated courts in specific areas.
- The designated court will possess the ability to make the provisional attachment absolute once approached by the competent authority.
- The court will then direct the competent authority in how the deposits recovered in this manner will be equitably redistributed to the depositors.
- The entire process is to be completed within 180 days of the application from the competent authority to the court.
- The central government will additionally designate an authority to establish an online database with information on various deposit-takers.
- The database will be used to ascertain which deposit-takers are regulated, and which are not. Deposit-takers will be required to inform the authority in charge of the database about their actions and the state of their business.

What are the penalties for violating the provisions of the Bill?

- Three kinds of offences are delineated under this Bill: running unregulated deposit-taking schemes (which includes advertising, operating, and accepting money for such schemes), fraudulently defaulting on the deposits made under a regulated deposit-taking scheme, and prompting investors to invest in unregulated deposit schemes by knowingly falsifying facts.
- The first kind of offence has been made punishable by 2 to 7 years of imprisonment, and a fine of Rs 3 lakh to Rs 10 lakh.

- The second kind of offence is punishable by imprisonment for 3 to 10-year, and fines ranging from Rs 2 lakhs to double the amount collected from depositors.
- Repeat offenders may be punished by a 5 to 10-year stint in prison, and fines ranging from Rs 10 lakh to 5 crore.