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# PRE-Cure

*(Relevant Current Affairs for UPSC Civil Services Examination)*

Weekly Compilation

*for*

**2nd Week of**

**December**

**2020**

***(7th December - 12th December)***

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## Table of Contents

<b>1. Geography.....</b>	<b>1</b>
1.1.China to Build Major Dam on Brahmaputra .....	1
1.2.Bangladesh begins Rohingya relocation despite rights concerns .....	2
1.3.Indonesia’s Mount Ili Lewotolok eruption.....	4
1.4.Draft National Policy for Flying Drones.....	5
1.5.Why Cyclone Burevi won’t be as strong as Cyclone Nivar .....	6
<b>2. History .....</b>	<b>8</b>
2.1.Annapurna Statue to come back to India.....	8
2.2.Mahaparinirvana Diwas .....	9
<b>3. Polity.....</b>	<b>11</b>
3.1.CCTVs in offices of CBI, ED, police stations .....	11
3.2.NRIs could soon be able to vote via post. ....	11
3.3.Convicted Legislators cannot be barred for life from contesting polls.....	13
3.4.Hold fresh polls where NOTA got most votes .....	13
3.5.CLMV Conclave.....	15
<b>4. Economy .....</b>	<b>16</b>
4.1.Centre's GST compensation formula .....	16
4.2.Niti Aayog recommends single self-regulatory body for Online Fantasy Sports...18	18
4.3.RBI tightens oversight of NBFCs, UCBs .....	19
4.4.FinMin proposes DFI tag for IIFCL to support long term financial needs .....	20
4.5.Dedicated Freight Corridor: 40% DFC track to be completed by 2021 .....	20
4.6.ADB, India sign \$50-million loan to boost Bengal’s financial management reforms	21
4.7.Supreme Court upholds imposition of GST on lotteries, betting and gambling ....	22
4.8.RBI allows RRBs to access LAF, MSF windows.....	23
4.9.FATF.....	24
4.10.Famers protesting .....	26
4.11.Formula for crops’ MSP.....	27
<b>5. Environment.....</b>	<b>28</b>
5.1.Indian peacock softshell turtle .....	28
5.2.Warning of Brahmaputra Floods In Tree Rings .....	29
5.3.Bihar Plans Migratory Bird Festival .....	30
5.4.India’s renewable energy park on its border with Pakistan.....	31
5.5.Committee for Implementation of Climate Change Targets .....	32
5.6.Cheetah: The Comeback.....	33

<b>6. Science &amp; Technology .....</b>	<b>36</b>
6.1. <i>Emergency use authorization .....</i>	36
6.2. <i>Rocket Booster from 1966 Become a Near-earth Object.....</i>	38
6.3. <i>China's Quantum Computer.....</i>	39
6.4. <i>Lab-grown meat .....</i>	40
6.5. <i>China's 'artificial sun' .....</i>	42

# 1. Geography

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## 1.1. China to Build Major Dam on Brahmaputra

- Context: China will build a major hydropower project on Brahmaputra River in Tibet and a proposal for this has been put forward in the 14th Five-Year Plan to be implemented from next year.
- China will implement hydropower exploitation in the downstream of the Yarlung Zangbo River (the Tibetan name for Brahmaputra).
- The project was put forward in the proposals for formulating the country's 14th Five-Year Plan (2021-25) and its long-term goals through 2035 made by the Central Committee of the ruling Communist Party of China (CPC).
- As a lower riparian State with considerable established user rights to the waters of the trans-border rivers, the Indian government has consistently conveyed its views and concerns to the Chinese authorities and has urged them to ensure that the interests of downstream States are not harmed by any activities in upstream areas.
- The 60 million kWh hydropower exploitation at the downstream of the Yarlung Zangbo River could provide 300 billion kWh of clean, renewable and zero-carbon electricity annually.
- The project will play a significant role in realising China's goal of reaching a carbon emissions peak before 2030 and carbon neutrality in 2060.
- India and China established Expert Level Mechanism (ELM) in 2006 to discuss various issues related to trans-border Rivers.

### Concerns for India

- China's dam building overdrive is a concern because there are no bilateral or multilateral treaties on the water.
- China believes dam building on the Brahmaputra helps it assert claim over Arunachal Pradesh.
- India believes China's projects in the Tibetan plateau threaten to reduce river flows into India.
- Dams, canals, irrigation systems can turn water into a political weapon to be wielded in war, or during peace to signal annoyance with a co-riparian state.
- Denial of hydrological data becomes critical when the flow in the river is very high.
- China is contemplating northward re-routing of the Yarlung Zangbo.
- Diversion of the Brahmaputra is an idea China does not discuss in public, because it implies devastating India's north-eastern plains and Bangladesh, either with floods or reduced water flow.
- In 2013, India complained to China about its hydro projects on the Brahmaputra.
- India and China signed two pacts in 2008 and 2010 which facilitated India with data on water levels and rainfall twice a day from June 1 to October 15 at three hydrological stations in Tibet.
- In 2001, an artificial dam in Tibet collapsed and killed 26 people and damaged property of Rs 140 crore along the river Siang in Arunachal Pradesh.

## The Lalho project

- The Lalho project on the Xiabuqu River in Xigaze (close to Sikkim) is underway at an investment of \$740 million.
- Xigaze is a few hours from the junction of Bhutan and Sikkim. It is also the city from where China intends to extend its railway towards Nepal.
- China's first dam on the main upper reaches of the Brahmaputra was built at Zangmu in 2010.
- Three more dams at Dagu, Jiacha, and Jeixu (small-scale projects) are under construction.
- In 2015, China inaugurated the Zam Hydropower Station, largest in Tibet, the highest dam built on Brahmaputra.

## The Tributary that was blocked

- The Xiabuqu River, 195-km long, flows from Bainang in Tibet northwards and joins the Yarlung Zangbo near the region called Xigaze, also known as Shigatse.
- This tributary was blocked for the Lalho hydel project that launched in June 2014.



## 1.2. Bangladesh begins Rohingya relocation despite rights concerns

- Context: Authorities in Bangladesh have begun relocating thousands of Rohingya refugees to an isolated island despite calls by human rights groups for a halt to the process.
- Police escorted the refugees from Cox's Bazar for to Bhasan Char - a flood-prone island that emerged from the sea 20 years ago.
- Bangladesh says transporting refugees to Bhasan Char - a Bay of Bengal island hours from the mainland by boat - will ease chronic overcrowding in its camps at Cox's Bazar, which are home to more than one million Rohingya.
- The UN in a statement has said: "[Any] relocations to Bhasan Char should be preceded by comprehensive technical protection assessments."
- Humanitarian and human rights groups have said the island is flood-prone and vulnerable to frequent cyclones, while the government has not allowed the United Nations to carry out a safety assessment.

## Myanmar crackdown

- More than 730,000 Rohingya fled Myanmar in 2017 following a military-led crackdown that the UN has said was executed with genocidal intent.
- Myanmar denies it carried out genocide and says its forces were taking aim at Rohingya rebels who attacked police posts.

## Who are Rohingya?

- Rohingya are an ethnic group, largely comprising Muslims, who predominantly live in the Western Myanmar province of Rakhine.
- They speak a dialect of Bengali, as opposed to the commonly spoken Burmese language.
- Though they have been living in the South East Asian country for generations, Myanmar considers them as persons who migrated to their land during the Colonial rule.
- So, it has not granted Rohingyas full citizenship.
- According to the 1982 Burmese citizenship law, a Rohingya (or any ethnic minority) is eligible for citizenship only if he/she provides proof that his/her ancestors have lived in the country prior to 1823.
- Else, they are classified as “resident foreigners” or as “associate citizens” (even if one of the parent is a Myanmar citizen).
- Since they are not citizens, they are not entitled to be part of civil service.
- Their movements are also restricted within the Rakhine state.

## “Floating Island”: New home for Rohingya

Bangladesh is turning a cyclone-lashed island in the Bay of Bengal into a home for 100,000 Rohingya Muslims who have fled violence in neighbouring Myanmar

Bhasan Char, meaning “floating island”, emerged from silt around 20 years ago. It regularly floods during Jun-Sep monsoon season

**Bhasan Char project**  
Area: 6.7 sq km  
Cost: \$280m



**Kutupalong:** More than 585,000 people living in and around refugee camp

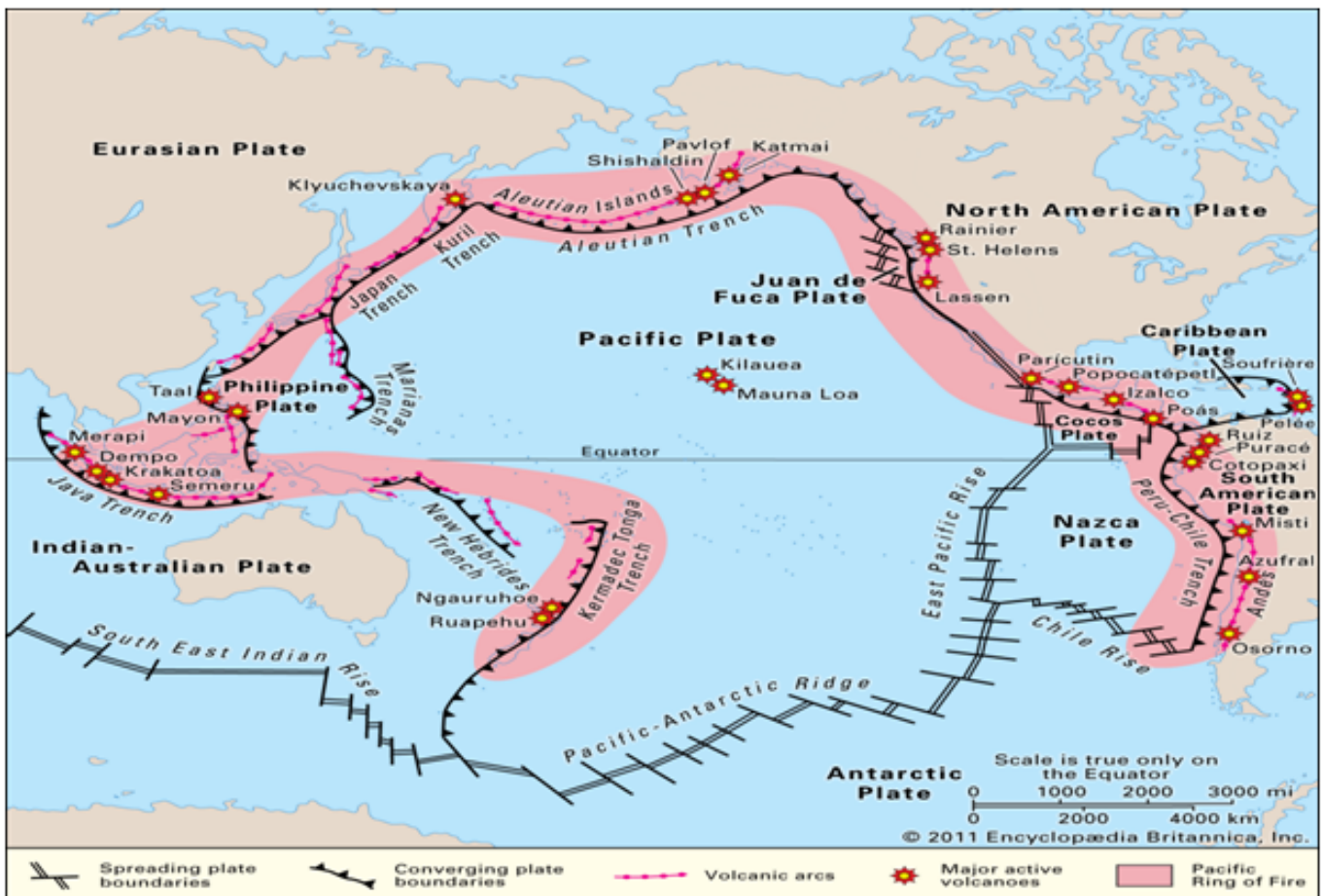
More than 688,000 Rohingya have fled persecution in Myanmar's Rakhine State since Aug 2017, joining around 300,000 refugees already in Bangladesh



## 1.3.Indonesia's Mount Ili Lewotolok eruption

- Indonesia's Mount Ili Lewotolok erupted, releasing a column of smoke and ash 2.5 miles (4km) into the sky.
- A 1.2-mile no-go zone around the crater was also expanded to 2.5 miles
- Indonesia is home to about 130 active volcanoes due to its position on the Ring of Fire, a belt of tectonic plate boundaries circling the Pacific Ocean where frequent seismic activity occurs.
- In late 2018, Anak Krakatau, a volcano in the strait between Java and Sumatra islands, erupted and caused an underwater landslide that unleashed a tsunami, killing more than 400 people.

### Pacific Ring of Fire

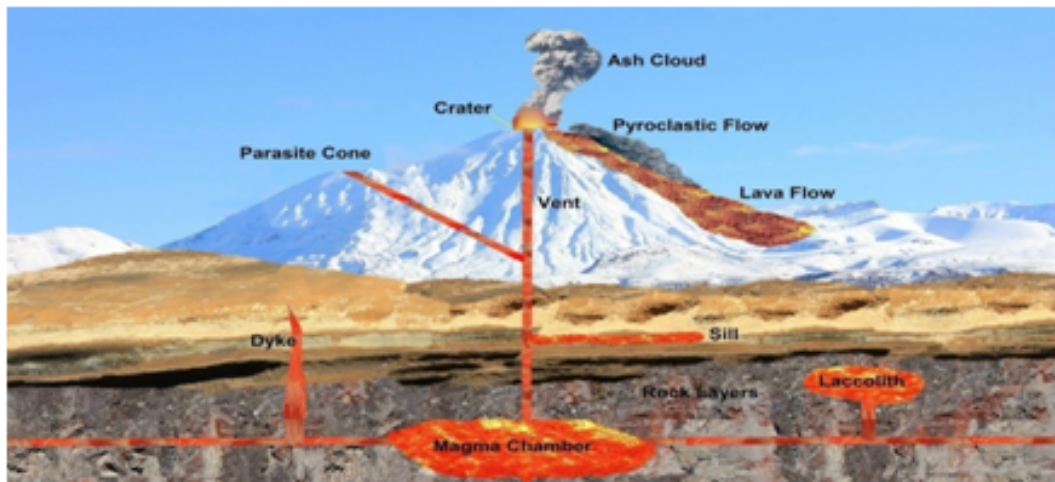


- Circum-Pacific Belt or Pacific Ring of Fire, long horseshoe-shaped seismically active belt of earthquake epicentres, volcanoes, and tectonic plate boundaries that fringes the Pacific basin.
- For much of its 40,000-km (24,900-mile) length, the belt follows chains of island arcs such as Tonga and New Hebrides, the Indonesian archipelago, the Philippines, Japan, the Kuril Islands, and the Aleutians, as well as other arc-shaped geomorphic features, such as the western coast of North America and the Andes Mountains.
- Volcanoes are associated with the belt throughout its length; for this reason it is called the “Ring of Fire.”
- A series of deep ocean troughs frame the belt on the oceanic side, and continental landmasses lie behind.

- Most of the world's earthquakes, the overwhelming majority of the world's strongest earthquakes, and approximately 75 percent of the world's volcanoes occur within the Ring of Fire.

## Volcanoes

- Volcanoes erupt when molten rock called magma rises to the surface. Magma is formed when the earth's mantle melts.
- Melting may happen where tectonic plates are pulling apart or where one plate is pushed down under another.
- Magma is lighter than rock so rises towards the Earth's surface. As the magma rises, bubbles of gas form inside it.
- Runny magma erupts through openings or vents in the earth's crust before flowing onto its surface as lava.
- If magma is thick, gas bubbles cannot easily escape and pressure builds up as the magma rises.
- When the pressure is too much an explosive eruption can happen, which can be dangerous and destructive.
- Another way an eruption happens is when water underneath the surface interacts with hot magma and creates steam,
- This can build up enough pressure to cause an explosion.



## 1.4.Draft National Policy for Flying Drones

- Context: The policy is designed to cover flight planning capabilities and authorisation, as well as offer real-time situational awareness, weather and terrain data, and also help manage Unmanned Aircraft System (UAS) traffic.
- To carve out a national policy on flying drones, the government has invited public comments from stakeholders on this.
- The policy proposal was aimed to use drones to fly alongside manned aircraft (scheduled and non scheduled and other aircraft flying in the sky)
- The need for UTM Systems is now being felt as drones will soon need to fly alongside manned aircraft so there is a need to maintain high levels of aviation safety in such scenarios, apart from which integrating drones in current Air Traffic Management (ATM) systems may be complex and expensive.



- This draft document comes in the backdrop of several instances globally of drones coming in the way of aircraft taking off or landing at busy airports affecting their operations.
- In January last year, Heathrow airport in London had to shut its operations for an hour because of a drone sighting. BBC cited a Heathrow spokeswoman as saying that this was done a "precautionary measure" to "prevent any threat to operational safety."
- A month earlier there was another disruption at Gatwick Airport which saw thousands of people stranded when drones were sighted.
- Similarly, in 2016, the world's busiest airport at Dubai was shut down for about 30 minutes after a drone was sighted.
- In India, drones are already being used by various institutions including by the Police which used drones to ensure that lockdown rules were implemented during the COVID pandemic.
- In November, the Ministry of Civil Aviation and the Directorate General of Civil Aviation granted conditional exemption to the International Crops Research Institute (ICRISAT) in Hyderabad for the deployment of drones for agricultural research activities.
- As such, the proposed policy would not only help uphold the necessary levels of aviation safety but also integrate drones into the current Air Traffic Management (ATM) systems.

## 1.5. Why Cyclone Burevi won't be as strong as Cyclone Nivar

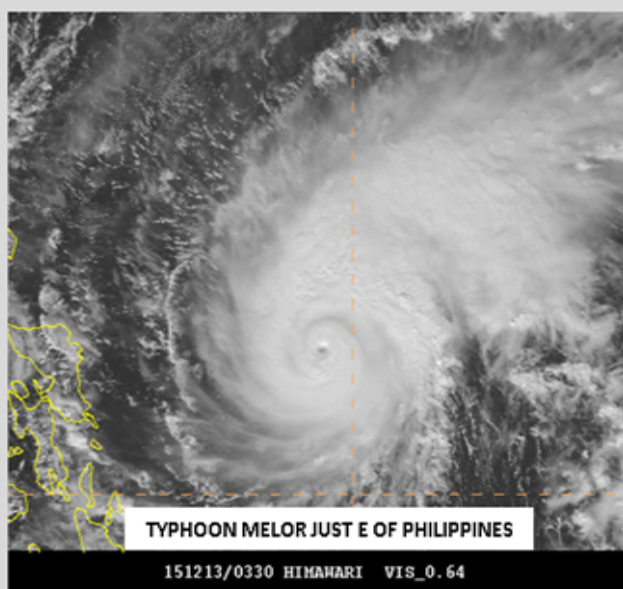
- Context: Seven days after Cyclone Nivar hit the Karaikal coast, another cyclone, Burevi, named by the Maldives, is expected to cross Tamil Nadu's southernmost district of Kanyakumari later this week.
- This is the third cyclone formed within the last 10 days in the Arabian Sea and the Bay of Bengal, put together.
- The India Meteorological Department (IMD) has warned of heavy rain for Tamil Nadu and Kerala till December 5.
- The cyclone was located 200 km east of Trincomalee in Sri Lanka, 420 km east-southeast of Pamban and 600 km east-northeast of Kanyakumari in Tamil Nadu.
- Under the influence of this cyclone, heavy to extremely heavy rain (over 204 mm) is forecast in Tamil Nadu and Kerala till December 5.
- As a cyclonic storm, Burevi is expected to first cross the Sri Lankan coast near Trincomalee, later it will trace a west-north-westwards track, reach Gulf of Mannar and inch closer to Indian mainland's southernmost tip.
- The Met department has forecast that Burevi will cross between Kanyakumari and Pamban as a cyclonic storm (wind speed 78 to 80 km/hour, gusting to 100 km/hour)

### Will Cyclone Burevi be as strong as Cyclone Nivar?

- Developed in the Bay of Bengal, the very severe cyclone Nivar, with wind speeds of 89 to 117 km/hr, had hit near Karaikal on November 25.
- Unstable sea conditions, in the southwest region of Bay of Bengal, continue due to the recent crossing of Nivar.

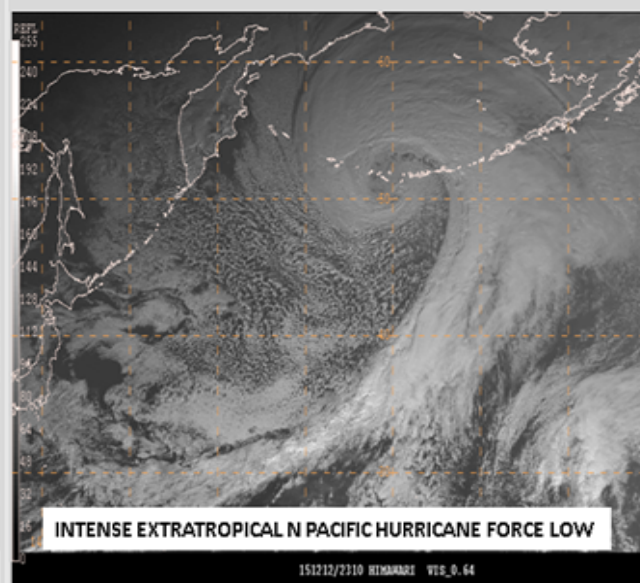
- The overall sea conditions currently remain disturbed.
- This is why there is a high possibility that Cyclone Burevi would not strengthen beyond the intensity of a cyclonic storm.
- Due to upwelling caused by Nivar, Cyclone Burevi will have limited intensity.
- When such consecutive systems develop in the same region of the ocean, the predecessor system leads to upwelling – the process in which cooler waters from lower ocean surfaces are pushed towards upper ocean surfaces.
- In the absence of warm sea surface conditions, any cyclone, in this case Burevi, will not get enough fuel to intensify further while at sea.
- The IMD has indicated that Burevi will remain a cyclonic storm (wind speed 62 to 88 km/hr) till December 5, before it weakens into a deep depression.

### TROPICAL VERSUS EXTRATROPICAL : WHAT ARE THE DIFFERENCES?



#### CHARACTERISTICS OF TROPICAL CYCLONES:

- Warm core low pressure
- Warm ocean waters (at least 80°F / 27°C) throughout a depth of about 150 ft (46 m)
- A pre-existing, near-surface disturbance
- Low values (less than about 23 mph / 37 km/h) of vertical wind shear between the surface and the upper troposphere
- No thermal advection (no fronts)
- Strong winds result from turbulent mixing and strong pressure gradient
- Typically wind field is smaller, more symmetrical, and more intense
- Will transition to a post-tropical cyclone, or will eventually weaken when source of heat/moisture removed (landfall or movement over colder waters), by dry air intrusion, or by vertical wind shear aloft



#### CHARACTERISTICS OF POST-TROPICAL / EXTRATROPICAL CYCLONES:

- Cold core low pressure
- Can also be called mid-latitude or baroclinic cyclones
- Normally forms along a pre-existing frontal boundary (extratropical), or is transitioned from a tropical system (post-tropical)
- Driven by 500 mb vorticity advection (about 18,000 ft) and horizontal temperature contrasts that exist in the atmosphere (forcing)
- Strong winds commonly due to winds aloft mixing down towards the surface,
- Strongest winds typically found S and SW of the low pressure center
- Expansive wind field, some can span entire ocean basins nearly 3000 nm (3,450 miles or 5555 km)
- Will weaken with decreased vorticity and thermal advectons, when upper level low catches up with the low level feature (system becomes vertically stacked)

## 2. History

Click [here](#) to watch the following questions on YouTube

### 2.1. Annapurna Statue to come back to India

- Context: The statuette of Goddess Annapurna, which was stolen over a century ago and transported to Canada, will soon be making its way back to India, to its original home in Varanasi.
- It is believed that this 18th century idol was acquired by lawyer Norman McKenzie in the early 20th century.
- After it was stolen, the statue became part of MacKenzie Art Gallery at the University of Regina in Canada.
- The idol is expected to be returned by mid-December.
- After its arrival, verification and documentation will be done, following which it will be decided where it will be placed in Varanasi.
- The announcement regarding the bringing back of the idol was made by Prime Minister during Dev Deepawali Mahotsav in Varanasi.
- Prior to this, interim president and vice-chancellor of the University of Regina, had handed over the statue to India's high commissioner to Ottawa, in a virtual repatriation ceremony.
- Annapurna, also called 'Annapoorna' is known as the goddess of food and nourishment.
- She is also known as the manifestation of the goddess Parvati, partner to Lord Shiva.
- The 18-century idol built following the Benaras style of art had so long been an exhibit at the MacKenzie Art Gallery, an art museum in Canada that showcases the private collection of the Regina University.



### Other repatriated objects from the West

- Union Culture Minister recently handed over the custody of a bronze idol of Lord Rama, Lakshman and Goddess Sita to the Tamil Nadu government after bringing it back from the UK.
- He has also put the onus of their safe custody to the respective state's government to avoid any future situation of theft.
- In the last six years, the government was able to trace back 40 antiquities from various countries that were stolen in between 1977 and 2014.
- According to ASI records, 13 of them were brought back to India.

### Legal Provisions in India

- Antiquities And Art Treasures Act 1972.
- Indian Treasure Trove Act 1949.
- National Mission on Monuments and Antiquities- it creates a National Register on Artifacts that are unprotected.

- National Manuscript Mission for Documenting Heritage.
- Bilateral agreements to recover smuggled artifacts.

## 2.2. Mahaparinirvana Diwas

- Context: December 6, 2020, marks the 64th death anniversary of DrBhimrao Ramji Ambedkar, the chief architect of the Indian Constitution. BR Ambedkar breathed his last on December 6, 1956, in his sleep and people pay their tributes to him on this day every year which is observed as the Mahaparinirvana Diwas.
- Parinirvana, regarded as one of the major principles as well as goals of Buddhism, is a Sanskrit term which means release or freedom after death.
- As per the Buddhist text Mahaparinibbana Sutta, the death of Lord Buddha at the age of 80 is considered as the original Mahaparinirvana.
- Owing to his status as a Buddhist leader, Ambedkar's death anniversary is referred to as Mahaparinirvana Diwas.
- Ambedkar, who belonged to the Mahar caste which was considered untouchable in Hinduism, converted to Buddhism after studying the religion for years on October 14, 1956, in Nagpur along with 500,000 supporters.
- He died just a few days after completing his last work, The Buddha and His Dhamma, a treatise on Buddha's life and Buddhism.
- Ambedkar believed that Dalits can never get their rights within Hinduism.
- Baba Saheb, as he is fondly called by his supporters, was born on April 14, 1891, in Madhya Pradesh's Mhow.
- Because of his caste, Ambedkar witnessed economic and social discrimination since childhood.
- In 1912, Bhimrao graduated in political science and economics from Bombay University after which he got a job in Baroda but decided to move to the United States in 1913 for further studies.
- In 1916, he received a doctorate degree from Columbia University, becoming the first Indian to do so.
- According to Ambedkar, Columbia University was the first place where he "experienced social equality."
- When he returned from the United States, the Maharaja of Baroda appointed Ambedkar as his political secretary.
- Bhimrao moved to Bombay in 1917 and established a fortnightly newspaper "Mooknayak" in 1920 which laid the foundations of an assertive and organised Dalit politics.
- Ambedkar was appointed by the Bombay Presidency Committee to work in the Simon Commission in 1925.
- In 1926, Ambedkar successfully defended three non-Brahmin leaders who had accused the Brahmin community of ruining India and were then subsequently sued for libel.
- This made Ambedkar popular in the country after which he led the Mahad Satyagraha in 1927 to allow untouchables to use water in a public tank in Mahad, Maharashtra.

- The Kalaram Temple Movement of 1930 formed a pivotal role in the Dalit movement in India in which Ambedkar led a protest outside the Kalaram temple which did not allow Dalits to enter the temple premises.
- In 1932, Ambedkar was invited to attend the Second Round Table Conference in London where he demanded separate electorates for Dalits.
- Mahatma Gandhi was against separate electorates for untouchables and protested by fasting in Yerwada jail.
- Ultimately, Ambedkar agreed with Gandhi and signed the Poona Pact, whereby a number of seats were reserved for the untouchables, which gave the Dalits a place in the general electoral list.
- On August 29, 1947, he was appointed as the chairman of the Constitution Drafting Committee for the constitution of independent India. After Independence, he was appointed as the law minister of India.

 **GOVERNMENT DECLARED THE 5 PLACES ASSOCIATED WITH DR. B. R. AMBEDKAR AS PANCH TEERTH** 

 **Mahaparivarna Bhoomi, Delhi.**

 **CHAITYA BHOOMI, MUMBAI**

 **Deeksha Bhoomi, Nagpur**

 **Siksha Bhoomi, London**

 **JANM BHOOMI, MHOW, MADHYA PRADESH**

 **Dr. Thawarohand Gehlot**  
Union Minister of  
Social Justice and Empowerment,  
Govt. Of. India. 

## 3. Polity

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### 3.1. CCTVs in offices of CBI, ED, police stations

- With the aim of preventing custodial torture, the Supreme Court ordered for installation of CCTV cameras in the offices of the Central Bureau of Investigation (CBI), Enforcement Directorate (ED), the National Investigation Agency (NIA) and other agencies, in addition to police stations across the country.
- Extending the ambit of its 2018 order, SC has directed the central government to get CCTV cameras with audio-recording facility installed in the offices of CBI, ED, NIA, Narcotics Control Bureau (NCB), Department of Revenue Intelligence (DRI), Serious Fraud Investigation Office (SFIO) and all such agencies, which have the power to make arrests and interrogate.
- In 2018, the court had passed a judgment for bringing all police stations under the surveillance of the CCTV cameras to check human rights abuses.
- For this purpose, all states were required to constitute independent committees that could study CCTV camera footages and periodically publish reports of its observations.
- Further, this judgment asked the Central government to set up a Central Oversight Body (COB) and provide necessary funds so that it could issue necessary directions to states and union territories to facilitate videography of the crime scenes and compliance with other directions of the apex court.
- The court order made SHO of each police station responsible for upkeep and maintenance of CCTV cameras.
- The cameras need to be installed at all entry and exit points, main gate of the police station, all lock-ups, reception area, officials' rooms, and station hall.
- The court has directed the states to make sure that good quality cameras with high resolution, night vision and a recording retention facility for at least a year are purchased and installed immediately in all police stations.
- A State Level Oversight Committee, comprising secretary or additional secretary from home and finance departments, director general of police or inspector general of police and a member of the state women's commission, must also be constituted to make certain the court's directions are duly complied with, besides taking care of budgetary allocations and supervision at the state level.
- Similarly, District Level Oversight Committees, consisting of the district magistrate, a superintendent of police and a municipality mayor, will be set up in all districts to interact with the SHOs for upkeep of CCTVs and review the footage for any human right violation.

### 3.2. NRIs could soon be able to vote via post.

- Context: The Election Commission (EC) approached the Law Ministry to permit NRIs to cast their votes from overseas through postal ballots.
- The EC told the government it had received representations from the Indian diaspora about facilitating voting through postal votes since travelling to India only for this purpose is a "costly affair".

- The Commission informed the government that it is “technically and administratively ready” to extend the Electronically Transmitted Postal Ballot System (ETPBS) to voters abroad for elections next year in Assam, West Bengal, Kerala, Tamil Nadu and Puducherry.

### **What is the current process of voting for Indian citizens living abroad?**

- An NRI can vote in the constituency in which her place of residence, as mentioned in the passport, is located.
- She can only vote in person and will have to produce her passport in original at the polling station for establishing identity.
- Voting rights for NRIs were introduced only in 2011, through an amendment to the Representation of the People Act 1950.

### **If approved, how will voting by postal ballots work for NRIs?**

- Any NRI interested in voting through the postal ballot in an election will have to inform the Returning Officer (RO) not later than five days after the notification of the election.
- On receiving such information, the RO will dispatch the ballot paper electronically.
- The NRI voters will download the ballot paper, mark their preference on the printout and send it back along with a declaration attested by an officer appointed by the diplomatic or consular representative of India in the country where the NRI is resident.
- It's not clear, if the voter will return the ballot paper herself through ordinary post or drop it off at the Indian Embassy, which may then segregate the envelopes constituency-wise and send them to the Chief Electoral Officer of the state concerned for forwarding to the RO.

### **How and when did the proposal originate?**

- The EC began to look for options to enable NRIs to vote from overseas after it received several requests, and three writ petitions were filed by NRIs in the Supreme Court in 2013 and 2014.
- A 12-member committee was set up after the 2014 Lok Sabha elections to study mainly three options – voting by post, voting at an Indian mission abroad and online voting.
- The committee ruled out online polling as it felt this could compromise “secrecy of voting”.
- It also shot down the proposal to vote at Indian missions abroad as they do not have adequate resources.
- In 2015, the panel finally recommended that NRIs should be given the “additional alternative options of e-postal ballot and proxy voting”, apart from voting in person.
- Under proxy voting, a registered elector can delegate his voting power to a representative. The Law Ministry accepted the recommendation on proxy voting.

### **What happened to the proposal to grant proxy voting rights to overseas electors?**

- The Union Cabinet passed the proposal on proxy voting rights for NRIs in 2017.
- The government then brought a Bill amending the Representation of the People Act 1950.
- The Bill was passed by Lok Sabha and was awaiting Rajya Sabha's approval when it lapsed with the dissolution of the 16th Lok Sabha. This proposal hasn't been revived yet.

- To extend the postal voting facility to overseas voters, the government only needs to amend the Conduct of Election Rules 1961. It doesn't require Parliament's nod.

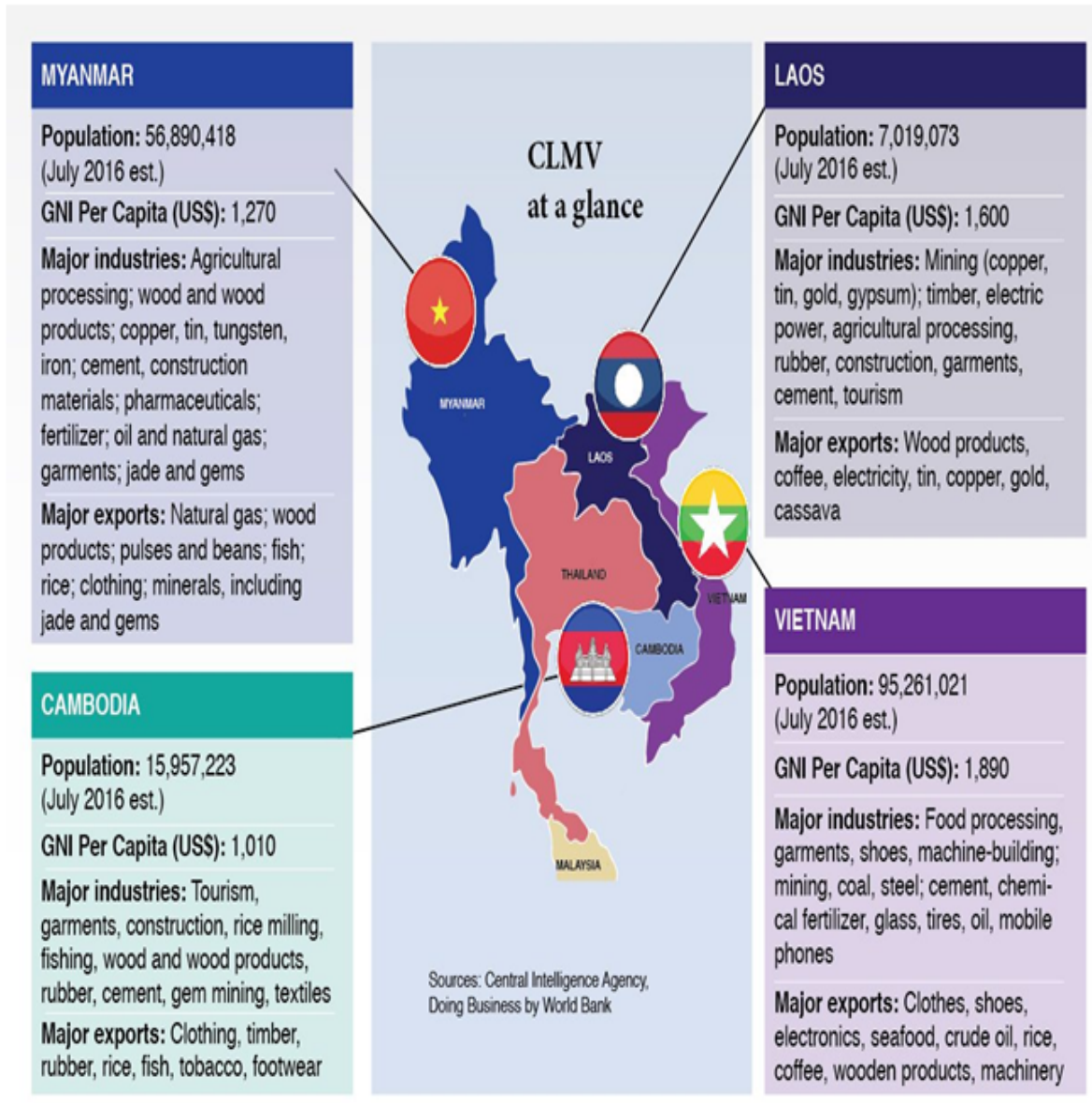
### 3.3. Convicted Legislators cannot be barred for life from contesting polls

- Context: The Central government has told the Supreme Court that it rejected the idea of barring convicted legislators for life from contesting elections, forming or becoming an office-bearer of a political party.
- The Union Ministry of Law and Justice said an elected representative of the people cannot be equated with public servants who are banned for a lifetime on conviction.
- The government said disqualification under the Representation of the People Act of 1951 for the period of the prison sentence and six years thereafter was enough for legislators.
- Election Commission has endorsed a life ban as necessary step towards decriminalization of politics.
- The case is based on a plea by Supreme Court advocate who argued that a life ban on conviction should uniformly apply for members of the judiciary, executive and the legislature.
- There should not be any discrimination of one from the other.
- He said an MP or MLA convicted for offences enumerated in Section 8 of the Representation of the People Act should be banned for life.
- He argued that while a public servant or a government employee is debarred for life on conviction for offences under the Indian Penal Code, money laundering law, foreign exchange violation, UAPA or cheque cases, among other laws, a legislator is "only disqualified for the same offences for a specified period".
- Offences under IPC apply to them as much as any other person.
- SC itself had said in a Constitution Bench decision in the Public Interest Foundation case of 2019 that though criminalisation of politics is a "bitter manifest truth", which is a termite to the citadel of democracy, the court cannot make the law.

### 3.4. Hold fresh polls where NOTA got most votes

- Context: An advocate has moved the Supreme Court for a direction that fresh elections should be held in a constituency where NOTA ('None of the above' option) garnered the maximum number of votes. Besides, none of the candidates who lost to NOTA should be allowed to contest the fresh polls.
- If the electorate has rejected candidates by voting for NOTA, the parties should be barred from fielding them again in the fresh polls. The parties should accept that the voters have already made their discontent loud and clear.
- Arguments made:
  - ✓ Right to reject and elect new candidate will give power to the people to express their discontent.
  - ✓ Right to reject will check corruption, criminalisation, casteism, communalism
  - ✓ Parties would be forced to give tickets to honest and patriotic candidates





- The 'right to reject' was first proposed by the Law Commission in 1999.
- It also suggested that the candidates be declared elected only if they have obtained 50%+1 of the valid votes cast.
- Similarly, the Election Commission endorsed 'Right to Reject', first in 2001, and then in 2004 in its Proposed Electoral Reforms.
- The 'Background Paper on Electoral Reforms', prepared by the Ministry of Law in 2010, had proposed that if certain percentage of the vote was negative, then election result should be nullified and new election held, the petition said.
- The use of NOTA in elections:
  - ✓ The option of NOTA for Lok Sabha and assembly elections was prescribed by the SC in 2013.
  - ✓ The option of NOTA in RS polls was introduced by the EC in 2014.
  - ✓ India became the 14th country to institute negative voting.

- Various enterprises from India and the CLMV countries showcased their products and services in agriculture, agri-food processing, farm inputs, allied services, manufacturing, automobiles, textile, and machine tools, power and clean energy, infrastructure, transport logistics, healthcare pharmaceuticals, IT, skills and education and many others.
- Important points for India:
  - ✓ The Buddhist Circuit tourism through a more interconnected railway system
  - ✓ The setting up of the Moreh Checkpost in Manipur.
  - ✓ A Project Development Fund with the title PDF- CLMV Fund is to be set up with an initial amount of INR 500 Crores.
  - ✓ The construction of the Trilateral Highway between India, Myanmar and Thailand at Kaladan Multimodal Transit Transport Project for promotion of connectivity in the regions.

### 3.5.CLMV Conclave

- Context: The Confederation of Indian Industry, CII in collaboration with the Union ministry of commerce and industry recently organised a virtual business conclave with Cambodia, Lao PDR, Myanmar, and Vietnam
- CLMV countries (Cambodia, Lao PDR, Myanmar, and Vietnam) act as key growth points for the ASEAN countries.
- It provides the region with a wider market outreach that results in preferential or free trade agreements, FTAs, with many other large economies of the world.
- The theme of the conclave was mainly focused on healthcare and pharma and the topics of the discussion deliberated by the expert speakers was on 'Creating a safer and healthier future and available opportunities for new investments and cooperation in the health and pharma sectors in the region'.
- It was held on CII HIVE which is the virtual platform of CII.

#### How is a NOTA vote cast?

- The EVMs have the NOTA option at the end of the candidates' list.
- Earlier, in order to cast a negative ballot, a voter had to inform the presiding officer at the polling booth.
- A NOTA vote doesn't require the involvement of the presiding officer.

#### Why have NOTA if there's 'no electoral value'?

- NOTA gives people dissatisfied with contesting candidates an opportunity to express their disapproval.
- This, in turn, increases the chances of more people turning up to cast their votes, even if they do not support any candidate, and decreases the count of bogus votes.
- Also, the Supreme Court has observed that negative voting could bring about "a systemic change in polls and political parties will be forced to project clean candidates".

## 4. Economy

Click [here](#) to watch the following questions on YouTube

### 4.1. Centre's GST compensation formula

- The Central government has set up a special borrowing window for the states and union territories who choose Option-1 to borrow the amount of shortfall arising out of GST implementation.

#### What is the GST compensation?

- The Constitution (One Hundred and First Amendment) Act, 2016, introduced national Goods and Services Tax (GST) in India from 1 July 2017.
- This law provided to compensate the States for loss of revenue arising out of implementation of the GST.
- The adoption of the GST was made possible by the States ceding almost all their powers to impose local-level indirect taxes and agreeing to let the prevailing multiplicity of imposts be subsumed under the GST.
- While the States would receive the SGST (State GST) component of the GST, and a share of the IGST (Integrated GST), it was agreed that revenue shortfalls arising from the transition to the new indirect taxes regime would be made good from a pooled GST Compensation Fund for a period of five years that is set to end in 2022.
- This corpus in turn is funded through a compensation cess that is levied on so-called 'demerit' goods.
- The computation of the shortfall – is spelt out in Section 7 of the GST (Compensation to States) Act, 2017 – is done annually by projecting a revenue assumption based on 14% compounded growth from the base year's (2015-2016) revenue and calculating the difference between that figure and the actual GST collections in that year.
- For the 2020-21 fiscal year, the revenue shortfall has been anticipated at ₹3 lakh crore, with the Compensation Fund expected to have only about ₹65,000 crore through cess accruals and balance to pay the compensation to the States.

#### How are the borrowing options supposed to work?

- The Union government proposed that the States borrow directly from the market by issuing debt under a special window coordinated by the Ministry of Finance.
- The Centre has also contended that of the projected shortfall of about ₹2.35 lakh crore, only ₹97,000 crore is the deficit arising out of GST implementation, with the balance ₹1.38 lakh crore attributable to an 'act of God' (the COVID-19 pandemic) that is independent of implementation of the new indirect tax regime.
- Option 1 entails the States selling debt securities in the market to raise the ₹97,000 crore.
- The Centre will "endeavour" to keep the interest cost on these borrowings "at or close to" the yield on G-Sec (bonds issued by the Government of India), and in the event of the cost being higher, bear a part of the difference through a subsidy.

**On The Table**

**Centre pegs GST loss** due to implementation at ₹97,000 cr

**Offers two borrowing options** to states

**Principal and interest** to be paid by cess collections after 5 yrs

**Compensation cess** on automobiles, cigarettes to go beyond 2022

**States to revert** after 7 days; GST Council to take up proposal at next meeting

**OPTION 1 ₹2.35 LAKH CRORE**

**Full GST compensation** shortfall for FY21 | **Borrowing from mkt;** Centre, RBI to facilitate

**Shortfall due to** pandemic as well as GST implementation | **Relaxation of 0.5%** in states' borrowing limit under FRBM Act

**OPTION 2 ₹97,000 CRORE**

**Shortfall amount owing** | **Borrowing via RBI** special window

**FM SPEAKS...**

**FY21** an extraordinary situation due to 'Act of God'

**Contraction** in economy expected

**In both options,** states not to be burdened

**Option** to be relooked at in FY 2021-22

**Nirmala Sitharaman**  
Finance minister

- This additional borrowing by the States will not be accounted for as a part of the State's debt for purposes of its overall debt calculation, and the repayment of the principal and interest on these borrowings will be done from the Compensation Fund by extending the period of cess collections beyond 2022.
- Under Option 2, the States can sell debt in the market to raise the entire ₹2.35 lakh crore shortfall but with the terms of the borrowing being far less favourable.
- Crucially, here the interest cost would have to be borne by them with only the principal being serviced by the Compensation Fund.
- Now all the 28 states and three union territories with legislature have decided to go for the Centre-suggested compensation formula to meet the revenue shortfall arising out of the GST implementation.
- Jharkhand, the only remaining state, has now communicated its acceptance of Option-1 given by the Centre.
- The Central government has set up a special borrowing window for the states and union territories who choose Option-1 to borrow the amount of shortfall arising out of GST implementation.
- The window has been operationalised since October 23 and the Centre has already borrowed an amount of ₹30,000 crore on behalf of the states in five instalments and passed it on to the ones who chose Option-1.
- Now Jharkhand will also receive funds raised through this window starting from the next round of borrowing.
- The next instalment of ₹6,000 crore will be released on December 7.

**'Ready to reimburse shortfall... in time'**

The Centre is committed to paying the entire GST shortfall of ₹2.35 lakh crore to the states, but compensation may not be upfront, according to officials

**Two options to borrow**

<b>₹97,000 cr</b>	<b>₹2.35 lakh cr</b>
Borrowing ₹97k cr, the shortfall due to implementation of GST, means states don't have to bear the interest & principal, which will be paid via cess on luxury goods	States can borrow the entire ₹2.35 lakh crore - the total GST shortfall for states in FY21 - but in this case, the state govts will have to bear the interest burden

**OPPOSITION:** Some of the states such as West Bengal and Punjab have demanded that the Centre borrow the money, but finance ministry officials say this isn't a good idea as it would harden yields in the bond market, and could impact private-sector borrowers

**"In letter and spirit we want to give all the compensation [₹2.35L cr] that has to be paid to states... The compensation arising from shortfall due to Covid-19 will also have to be paid - only that will have to wait till the cess gets extended."**

— Finance ministry official

- Under the terms of Option-1, besides getting the facility of a special window for borrowings to meet the shortfall arising out of GST implementation, the states are also entitled to get unconditional permission to borrow the final instalment of 0.50 per cent of Gross State Domestic Product (GSDP) out of the 2 per cent additional borrowings permitted by the Centre under the AtmaNirbhar Abhiyaan on May 17, 2020.
- This is over and above the Special Window of ₹1.1 lakh crore.
- On receipt of the choice of Option-1, the Centre has granted additional borrowing permission of ₹ 1,765 crore to Jharkhand (0.50 per cent of the state's GSDP).

## 4.2.Niti Aayog recommends single self-regulatory body for Online Fantasy Sports

### Fantasy Sport

- Fans choose from real players in an online selection process, or a draft, to assemble a fantasy team.
- The players' real-game statistics are compiled and compared to see whose fantasy team has done the best.
- Players track how their fantasy team is doing using various web sites or mobile apps.
- Some players join leagues with friends and compete against only people they know.
- Others join public leagues hosted by web sites and compete against strangers.
- Niti Aayog, has recommended the setting up of a single self-regulatory body for online fantasy sports (OFS) in India.
- The recommendation was made through a draft report titled "Guiding Principles for the Uniform National-Level Regulation of Online Fantasy Sports Platforms in India", saying the body should be recognized by the government.
- The report comes as big support for online fantasy sports platforms which have been embroiled in battles over their legality in various states.
- NITI Aayog has initiated this discussion to examine the fantasy sports industry structure and consider evolving guiding principles that can help the industry to grow by adhering to guidelines which are consistent and based on well-recognised principles.
- Fantasy sports industry in the United States (US) was the largest in the works, till the Indian industry overtook it "recently".
- Such a self-regulatory body should be a single-purpose fantasy sports industry body and have membership of online fantasy sports platforms (OFSPs) operators.
- The regulation for OFS platforms varies across states in the country, which results in "inconsistent experience" and "risk of forum/jurisdiction shopping."



- Online fantasy sports in India have drawn over Rs. 1500 crore in investments from foreign investors over the past few years, it's legality is often called into question still.
- Some states, like Assam, Orissa and Telangana, have made fantasy sports illegal within their borders, while, Tamil Nadu recently passed an ordinance that bans "online gaming" in the state, but doesn't explicitly mention fantasy sports platforms.
- Nagaland has explicitly recognized fantasy sports as games of skill, while Sikkim has a special license that real money gaming platforms can acquire to function in the state.
- Similarly, the Punjab & Haryana and Rajasthan High Courts have specifically passed rulings that recognize fantasy sports as games of skill, though none of these legally qualify as a countrywide law and the Supreme Court is yet to give its opinion on the matter.

### 4.3.RBI tightens oversight of NBFCs, UCBs

- The Reserve Bank of India (RBI) announced the introduction of risk-based internal audit norms for large urban cooperative banks (UCBs) and non-banking financial companies (NBFCs), as part of measures aimed at improving governance and assurance functions at supervised entities.
- The RBI also moved to harmonise the guidelines on appointment of statutory auditors for commercial banks, UCBs and NBFCs in order to improve the quality of financial reporting.

#### Systemic risk potential

- It is felt that a scale-based regulatory approach linked to the systemic risk contribution of NBFCs could be the way forward.
- With a view to deepening financial markets, regional rural banks would be allowed to access the liquidity adjustment facility (LAF) and marginal standing facility (MSF) of the RBI, as also the call/notice money market.

#### Secure digital payments

- To significantly improve the ecosystem of digital payment channels RBI has proposed to issue Digital Payment Security Controls directions for the regulated entities.
- These directions will contain requirements for robust governance, implementation and monitoring of certain minimum standards on common security controls for channels like Internet and mobile banking and card payments.
- The UCBs in India are under dual regulation, by the Reserve Bank of India (RBI) and the Registrar of Cooperative Societies (RCS).
- The RBI issues licenses, stipulates prudential norms, Cash Reserve and Statutory Liquidity Ratios, capital adequacy norms and so on.
- The RCS is responsible for election of the management and other administrative matters.
- Members of UCBs democratically elect the board of directors based on the principle of one member one vote.

#### Development Financial Institutions

- A financial agency that provide medium and long-term financial assistance and engaged in promotion and development of industry, agriculture and other key sectors.
- Ex: International Bank for reconstruction and Development (IBRD) also known as World Bank & International Monetary Fund (IMF)

- The borrowers and not the depositors are the members of UCBs.
- Hence, very often, the election of directors is marred by conflict of interest
- There are also a lot of vested political interests in the administration of these banks.

## 4.4. FinMin proposes DFI tag for IIFCL to support long term financial needs

- The finance ministry has proposed giving the 'development finance institution' (DFI) tag to India Infrastructure Finance Company Limited (IIFCL) in a bid to support long-term financial needs of infrastructure projects.
- The proposal being discussed will require the approval of Parliament as a Bill.
- IIFCL is a government-owned entity, which is registered as a non-deposit accepting loan company with the Reserve Bank of India.
- The firm, set up in 2006, is the only state-owned financial institution that lends to all the infrastructure sub-sectors.
- The move to convert IIFCL into a DFI is expected to reduce the cost of borrowings for long-term infrastructure projects, at a time when the government has planned Rs 111 trillion worth of infrastructure investments under the National Infrastructure Pipeline during 2020-25.
- FCI was the first DFI to be set up in India back in 1948, which is now classified as a systemically important non-banking financial company.
- Banks began lending to infrastructure firms in the past two decades, edging out DFIs, which became unviable.
- In the past years, ICICI and IDBI, which started as DFIs, were converted into banks, while sector-specific DFIs still exist – Export Import Bank of India, National Bank for Agriculture and Rural Development, and Small Industries Development Bank of India to name a few. But these DFIs focus on non-infrastructure sectors.
- Last year, the government approved additional equity support to the tune of Rs 15,000 crore in IIFCL, of which Rs 5,300 crore has already been infused through recapitalisation bonds in March 2020.

### TOP 5 SECTORS TO WHICH IIFCL LENDS

Amount sanctioned

	₹ cr*
Road	42,098
Power	36,310
Ports	4,157
Urban infrastructure	3,807
Airport	2,530
Cumulative sanction	90,050

\*Direct lending route; till March 2020; Note: All sectors are not included in the list, so cumulative sanction may not add up  
Source: IIFCL

## 4.5. Dedicated Freight Corridor: 40% DFC track to be completed by 2021

- The Dedicated Freight Corridor Corporation of India Limited (DFCCIL), responsible for developing the DFC project, recently announced that Indian Railways will be operating its freight trains on 40 per cent of the corridor by next year.



- The freight corridor project is one of the largest railway infrastructure projects and is being implemented at a cost of ₹ 81,459 crore.
- The Western DFC project, which will be 1,504 km long will stretch from J N Port in Mumbai to Dadri in Uttar Pradesh.
- Whereas, the 1,856 km long Eastern DFC will stretch from Sahnewal in Punjab to Dankuni in West Bengal.
- The operational route which will complete by 2021 will provide a significant boost to the region's industrial growth.
- Along with this, most of the sections will be commissioned by March 2022 and the remaining part of the Eastern and Western DFC will get commissioned by June 2022.
- Once the Dadri-Rewari section of the DFC is completed, the roll-on roll-off (Ro-Ro) services of Indian Railways will begin
- The Ro-Ro services will contribute to a significant reduction in pollution in the national capital region (NCR). The service will reduce carbon emission and congestion on roads in Delhi.
- Apart from Eastern and Western DFC, three more corridors namely, East Coast East-West, and North-South Sub-Corridor are also set for implementation.
- The surveys for these corridors will be completed by 2021.
- These new corridors are targeted for completion by 2030
- Dedicated Freight Corridors (DFC) is a high speed and high capacity railway corridor that is exclusively meant for the transportation of freight or in other words goods and commodities.
- DFC involves the seamless integration of better infrastructure and state of the art technology.
- This article shares the economic benefits of the Dedicated Freight Corridor and the Public Sector Undertaking (PSU) established in 2006 to oversee its development.
- Dedicated Freight Corridor Corporation of India Ltd (DFCCIL) – Introduction:
- It is headquartered in New Delhi and is a Public Sector Undertaking (PSU).
- It is a business establishment operated by the Railways Ministry of the Government of India.
- It engages in the planning and development, deployment of monetary resources, building, upkeep, and the operation of the DFCs.
- The organisation was incorporated under the Companies Act, 1956 on 30th October 2006.
- DFCCIL has been assigned the status of 'special purpose vehicle' by the Indian government.

## 4.6.ADB, India sign \$50-million loan to boost Bengal's financial management reforms

- The Asian Development Bank (ADB) and the Central government have signed a \$50-million policy-based loan to improve financial management procedures and operational efficiencies aimed at achieving more fiscal savings, promote informed decision-making, and improve service delivery in



West Bengal.

- The integration of the State's financial and information systems through the programme's whole-of-government approach will help improve delivery of public services and generate fiscal savings that could help the state augment growth-enhancing development financing.
- The programme will ensure streamlining of social protection benefits like pension and provident fund, facilitate gender-disaggregated data, tax payments, and revenue collection.
- Development projects could be better tracked and monitored with the help of a new module within the integrated financial management system leading to improved project management.

### Public finance reform

- A centre for fiscal policy and public finance will be established to deepen capacity of the State government officials on public finance management while developing a web-based grievance redress system for transport corporations and urban local bodies will provide a credible citizen-government interface.
- The loan builds up on past ADB policy-based programmes in 2012 and 2017, supporting the Government of West Bengal on sustainable public financial management reforms.
- These programmes helped develop and implement an IFMS, established successful e-Governance systems for improved revenue administration, undertook measures for expenditure rationalisation, and promoted the private sector's involvement in service delivery.
- The loan is proposed to be supplemented by a \$3,50,000-technical assistance grant for capacity building, monitoring of IFMS reforms, and strengthening the integration of social and gender aspects in reform areas.

### Asian Development Bank (ADB)

- The Asian Development Bank (ADB) is a regional development bank established on 19 December 1966.
- ADB is headquartered in Manila, Philippines. It aims to promote social and economic development in Asia.
- ADB now has 67 members, of which 48 are from within Asia and the Pacific and 19 outside.
- Japan holds the largest proportion of shares in ADB followed by the USA.

## 4.7. Supreme Court upholds imposition of GST on lotteries, betting and gambling

- Context: SC upheld Goods and Service Tax (GST) shall be imposed on the sale of lotteries, betting and gambling.
- The SC upheld the notification issued under the Central Goods and Services Tax Act, 2017 wherein the lottery and gambling have been brought under the GST.
- SC dismissed the plea filed by Skill Lotto solutions which sought to declare the levy of GST on lottery as discriminatory and in violation to the provisions of the constitution of India.



- The order was passed in a batch of pleas filed by various lottery dealers which argued that Central government had wrongfully classified lottery as “goods”.
- The plea added that the lottery are pieces of paper and devoid of any value.
- The petitioners highlighted the alleged discriminatory practice wherein there is an imposition of 12% GST on lotteries sold within the same State and 28% GST for sale of tickets from other States.
- The Supreme Court held that the levy of Goods and Services Tax (GST) on lotteries, betting and gambling does not amount to hostile discrimination and is not violative of right to equality under the Constitution.
- Definition of goods under Section 2(52) of the Act does not violate any constitutional provision nor is it in conflict with the definition of goods given under Article 366 (12).
- Article 366 clause (12) as observed contains an inclusive definition and the definition given in Section 2(52) of Act, 2017 is not in conflict with definition given in Article 366(12).

## 4.8.RBI allows RRBs to access LAF, MSF windows

- Context: The Reserve Bank of India (RBI) allowed regional rural banks (RRBs) to access the liquidity adjustment facility (LAF), marginal standing facility (MSF) and call or notice money market, aimed at facilitating better liquidity management for these lenders.
- At present, RRBs are not permitted to access the liquidity windows of the RBI as well as the call or notice market.
- Marginal Standing Facility (MSF) is the rate at which the banks are able to borrow overnight funds from RBI.
- It has also been decided to permit the RRBs to participate in the Call/Notice money market, both as borrowers and lenders.
- RBI has assured markets of continued liquidity support while maintaining orderly market conditions. Revision in the On Tap TLTRO scheme and allowing RRBs to participate in LAF are steps that affirm RBI commitment in this direction.

- In addition, RBI proposed to bring the 26 stressed sectors identified by the Kamath Committee within the ambit of sectors eligible under on tap TLTRO.
- This is in addition to the five sectors announced under the scheme on October 21, 2020.
- The RBI today left the policy repo rate unchanged at 4 per cent.

**Chart 6. Summary of the National Strategy to Combat Money Laundering and the Financing of Terrorism**



Source: Financial Action Task Force (2012b).

## 4.9.FATF

- The Financial Action Task Force (FATF) annual joint experts' meet was held recently.
- FATF has apprised about 400 experts from both the public and private sectors of the latest risk findings related to money laundering and terror funding.
- It was attended by participants from various government agencies all over the world and international bodies such as the United Nations, the International Monetary Fund, the World Bank and Interpol etc.
- It emphasized on the importance of effective information sharing, which is one of the cornerstones of a well-functioning AML/CFT [Anti-Money Laundering/Combating the Financing of Terrorism] framework.
- Exchange of ideas on issues such as financing of ethnically or radically motivated terrorism, their transnational links, environmental crime, illegal arms trafficking and terror financing, and digital transformation took place

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**INTERLINKING  
NEW INDIA'S  
PROGRESS WITH  
UPCOMING POWERFUL  
FREIGHT CORRIDOR**

Indian Railways is on the fast track to build Dedicated Freight Corridors through Dedicated Freight Corridor Corporation of India Limited across the country. As an emerging power, India needs steady and fast movement of fuel, infrastructure material and trade goods that will be boosted by the Dedicated Freight Corridors. This marks a strategic inflexion point that will accelerate India's growth drive, improve customer orientation and meet market needs faster.

- Entire Dedicated Freight Corridor, comprising 3,360 km (approx) of track, entailing investment of Rs. 81,459 Cr to be completed by 2020. This will spur rapid industrial development along the corridor**
- First sections of Eastern DFC and Western DFC completed**
  - Eastern DFC: Bhadan to Khurja - 200 km completed
  - Western DFC: Rewari-Madar section - 306 km completed
- Train length to be increased from existing 700 meters to 1,500 meters. Double stack container trains to move on Western DFC section**
- Train load to be increased to 13,000 tonnes from existing 5,000 tonnes**
- Goods train to run at increased speed of 100 kmph from existing 75 kmph**
- Shifting of goods traffic to DFCs will enable running of more passenger trains on existing congested railway tracks**
- Environment friendly energy efficient mode will hugely facilitate reduction in pollution**
- DFCCIL will substantially increase railways share in freight transportation in comparison to road sector, which will result in saving precious fuel and foreign exchange**

**NAMUMKIN AB  
MUMKIN HAI**

- The experts presented the international legal framework on preventing access of terrorists to arms and provisions covering illegal arms trafficking.
- Participants also focused on the linkages between illicit arms trafficking and terrorist financing and the need for national risk assessments to address these risks.
- Experiences of using advanced analytics, such as text mining, privacy preserving technology, online analytical processing and social network analysis in the fight against money laundering and terrorist financing, were also shared.
- The Financial Action Task Force (FATF) is an inter-governmental body established in 1989 during the G7 Summit in Paris.
- The objectives of the FATF are to set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system.
- Its Secretariat is located at the Organisation for Economic Cooperation and Development(OECD) headquarters in Paris.
- It consists of thirty-seven member jurisdictions.

- FATF has two lists:
  - ✓ Grey List: Countries that are considered safe haven for supporting terror funding and money laundering are put in the FATF grey list. This inclusion serves as a warning to the country that it may enter the blacklist.
  - ✓ Black List: Countries known as Non-Cooperative Countries or Territories (NCCTs) are put in the blacklist. These countries support terror funding and money laundering activities. The FATF revises the blacklist regularly, adding or deleting entries.
- The FATF Plenary is the decision making body of the FATF. It meets three times per year.

## 4.10. Farmers protesting

- Context: Farmer protests against the three new agriculture-related laws have gathered momentum. The farmers have strongly come out in protest of recently passed:
  - ✓ 'Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020'
  - ✓ Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill, 2020' and
  - ✓ oEssential Commodities (Amendment) Bill 2020.
- This set of three laws passed in September aims to deregulate India's agriculture sector.
  - ✓ The government says these laws will "liberate" farmers from the tyranny of middlemen.
  - ✓ But many farmers fear that they stand to lose more than they could gain from the new regulations and that the main beneficiaries will be agricultural corporations with gargantuan financial firepower.

### So what do India's new farm laws do?

- They make it easier for farmers to bypass government-regulated markets (known locally as mandis) and sell produce directly to private buyers.
- They can now enter into contracts with private companies, a practice known in India as contract farming, and sell across state borders.
- The new regulations also allow traders to stockpile food.
- This is a shift away from prohibitions against hoarding, which could make it easier for traders to take advantage of rising prices, such as during a pandemic. Such practices were criminal offences under the old rules.

### Farmers point of view

- More than 86 percent of India's cultivated farmland is controlled by smallholder farmers who own less than two hectares (five acres) of land each.
- The new rules remove many of their safeguards.
- Small farmers fear that they just do not have enough bargaining power to get the kinds of prices they need for a decent standard of living when they negotiate to sell their produce to larger companies.

- The new laws also do not make written contracts mandatory.
- So in the case of any violation of their terms, it can be very hard for a farmer to prove that he or she has been aggrieved, giving them little recourse.
- The new rules do not guarantee any minimum price for any product, and farmers worry that the existing MSP will be abolished at some point.
- There is a huge communication failure on the part of the central government to explain to farmers what these laws are, and how they are intended to benefit them.
  - ✓ The confusion about MSP and procurement going away comes from Acts being linked to some previous policy documents like the Shanta Kumar Committee report and the CACP reports suggesting reduced procurement and an end to open-ended procurement from states like Punjab to cut down costs of FCI.
  - ✓ It is feared that FCI itself may start procuring directly from the new trade area to cut down buying costs like market fees and Arhtiya commission.
  - ✓ The changes in the “social contract” between the state’s farmers and the Union government that is the root cause of this apprehension.

## 4.11. Formula for crops’ MSP

- Context: The major demand of the protesting farmers has been that the government guarantee in writing the MSP system, which assures them of a fixed price for their crops, 1.5 times of the cost of production.

### MSP

- The MSP (minimum support price) assures the farmers of a fixed price for their crops.
- The Commission for Agricultural Costs & Prices (CACP) in the Ministry of Agriculture would recommend MSPs for 23 crops.
  - ✓ The CACP considered various factors while recommending the MSP for a commodity, including cost of cultivation.
  - ✓ It also took into account the supply and demand situation for the commodity; market price trends (domestic and global) and parity vis-à-vis other crops; and implications for consumers (inflation), environment (soil and water use) and terms of trade between agriculture and non-agriculture sectors.
  - ✓ The Budget for 2018-19 announced that MSPs would henceforth be fixed at 1½ times of the production costs for crops as a “pre-determined principle”.
  - ✓ The CACP’s job now was only to estimate production costs for a season and recommend the MSPs by applying the 1.5-times formula.

### Which production costs were taken in fixing the MSPs?

- The CACP’s ‘Price Policy for Kharif Crops: The Marketing Season 2018-19’ report stated that its MSP recommendation was based on 1.5 times the A2+FL costs.

✓ 'A2' covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.

✓ 'A2+FL' includes A2 plus an imputed value of unpaid family labour.'

- It does not take into account C2 costs.
- 'C2' is a more comprehensive cost that factors in rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL.

## THE MATH BEHIND GOVT'S MSP BOOST FOR FARMERS

### THREE WAYS TO ARRIVE AT COST



**1 A2 (Actual paid out cost):** All expenses incurred by farmers such as on seeds, fertilisers, pesticides, fuel, hired labour, irrigation and others.



**2 A2+FL:** A2 plus imputed value of unpaid family labour.



**3 C2:** Comprehensive cost including imputed rent on owned land and interest on value of owned capital assets.

Crop	Cost (A2+FL)	Cost (C2)	MSP (RMS* 2018-19)	Margin (%) over A2+FL cost
Wheat	₹817	₹1,256	₹1,735	112
Barley	₹845	₹1,190	₹1,410	67
Gram	₹2,461	₹3,526	₹4,250	73
Lentil	₹2,366	₹3,727	₹4,150	75
Safflower	₹3,125	₹3,979	₹4,000	28

\*RMS - Rabi Marketing Session

➤ FM said MSP for majority of Rabi crops fixed at 50% more than cost of production

➤ Ministry indicates A2+FL may be used for fixing MSP for Kharif crops for 2018-19



## 5. Environment

Click [here](#) to watch the following questions on YouTube

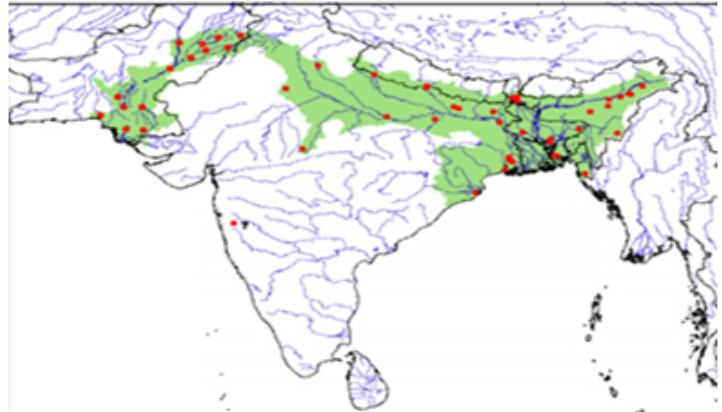
### 5.1. Indian peacock softshell turtle

- Context: A turtle of a vulnerable species was rescued from a fish market in Assam's Silchar.
- The Indian Peacock Softshell Turtle (*Nilssonina hurum*) is one of the most beautiful chelonians in the world, but it is unclear just what the reason for their unique carapace pattern is.
- This pattern fades as they get older, and it may reflect a defence mechanism from predators, similar to the eye spots of some species of moths and butterflies.
- About 29 species of turtles have been recorded in India, out of which 20 are found in Assam.
- About 90% of the turtles in Assam are facing some kind of threat.
- Conservation status:



- ✓ IUCN : Vulnerable
- ✓ IWPA : Schedule I
- ✓ CITES : Appendix I

- This species is confined to India, Bangladesh and Pakistan.
- It is widespread in the northern and central parts of the Indian subcontinent.
- Distribution map of Indian Peacock Softshell Turtle (Source: Iverson and Iverson, 1992).



### Characteristics, Habitat and Behaviour

- The Indian peacock soft-shell turtle has a large head, downturned snout with low and oval carapace of dark olive green to nearly black, sometimes with a yellow rim.
- The head and limbs are olive green; the forehead has dark reticulations and large yellow or orange patches or spots, especially behind the eyes and across the snout, that are larger than those in its sister species.
- Males possess relatively longer and thicker tails than females, with the cloaca situated close to the tail-tip.
- Indian peacock softshell turtle is found in rivers, streams, lakes and ponds with mud or sand bottoms.
- It is omnivorous, juveniles observed feeding on mosquito larvae and fish, while adults consume snails, earthworms, prawns, fish, frogs, carrion, and vegetation.
- Animals maintained in captivity are known to eat rice and palm sugar sweetmeats.

### Major Threats

- The species is heavily exploited for its meat and calipee (the outer cartilaginous rim of the shell).
- Threats in the River Ganga to the species are those generic for all large river turtles, including reduction of fish stock, as a result of overfishing, pollution, increase in river traffic, and sand-mining, among others.

## 5.2.Warning of Brahmaputra Floods In Tree Rings

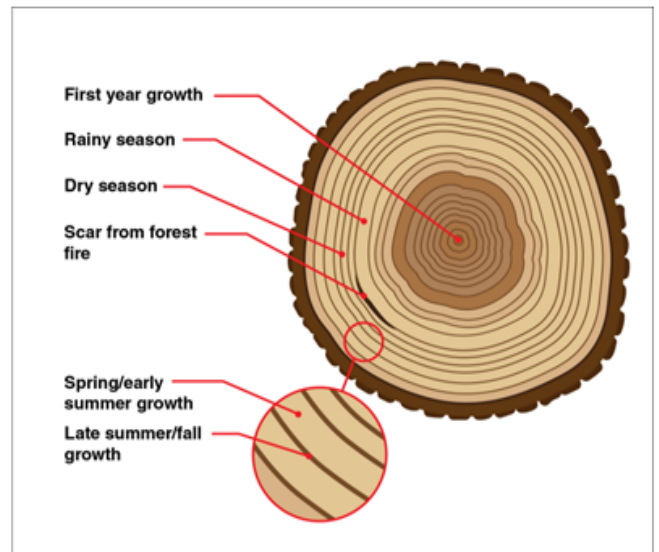
- Every year, the Brahmaputra floods vast areas in India's Northeast, particularly Assam.
- Existing projections of flooding of the Brahmaputra are based on observations of past rainfall patterns, but they rely on discharge-gauge records that date back only to the 1950s.
- A new study which is based on an examinations of tree rings, provided a picture of rainfall patterns going back seven centuries.
- The rings showed that the post-1950s period was actually one of the driest since the 1300s – there have been much wetter periods in the past.



- Using climate models to simulate for future discharge, the researchers found that destructive floods probably will come more frequently than thought.
- The tree-rings suggest that the recent decades (particularly from the 1950s to 1980s) were unusually dry.
- Similarly, climate models suggest that the future will likely be wetter due to our emissions of carbon-dioxide.
- Taken together, this suggests that we might be underestimating the current frequency of 'wet years' and in turn of flooding
- If one projects from modern discharge records, the study found, one would be underestimating the danger by 24% to 38%.

### Why tree rings

- Tree rings grow wider in years when soil moisture is high. Indirectly, wider rings reflect more rainfall and higher river runoff.
- As trees grow they incorporate information about the environmental conditions they are living in their annual growth rings.
- Trees in the region grow more and put on wide rings in wet monsoon years.
- Conversely in dry monsoon years (or droughts) they grow less and put on narrow rings.
- Since some of these trees can live for a long time, by taking a small, pencil-thin tree-core from these trees and measuring their rings under a microscope we can learn more about climate conditions for the past several centuries.
- Ancient trees were sampled at 28 sites in Tibet, Myanmar, Nepal and Bhutan, at sites close enough to be affected by the same weather systems as the Brahmaputra watershed.
- Analysing the rings, the scientists built a 696-year chronology (1309 to 2004).
- From historical records going back to the 1780s, the researchers found that the widest rings coincided with major flood years.
- From this, they extrapolated the yearly river discharge in the centuries preceding modern records.



## 5.3. Bihar Plans Migratory Bird Festival

- Bihar is holding a bird festival for the first time as part of its initiative to save migratory birds that arrive in the state in large numbers every year.
- The three-day festival is being organised in eastern Bihar's Bhagalpur district and will tentatively start from December 11, 2020.
- The festival is being jointly organised by the Bhagalpur forest division, non-profit Bombay Natural History Society and the local Mandar Nature Club.

- Selection of Bhagalpur for the bird festival held special significance because of the 60-kilometre-long stretch of the Vikramshila Dolphin Sanctuary between Sultanganj and Kahalgaon had long been a hub of migratory birds.
- Migratory birds normally come during November and stay till March, finding the region favourable for spending the winter.
- Prime objective behind holding the bird festival is to create awareness among people about the importance of migratory birds.
- Various programmes will be organised during the three-day festival. One of them will be a 'bird racing' programme involving finding birds, their habitats and their ecology.
- Other programmes during the bird festival include a presentation on birdlife and gathering public opinion on setting bird ringing stations in Bhagalpur.
- The 'ringing of birds' involves trapping them in nets and snares. Subsequently, they are weighed and their details logged before a metal ring inscribed with a unique number is tied to their tibia bone.
- This helps birdwatchers and professional conservationists log their presence across the globe.
- Some prominent migratory birds arriving in Bhagalpur include bar-headed goose, steppe eagle, Ferruginous duck, Eurasian curlew, white wagtail, great crested grebe, common greenshank and Eurasian coot.
- Such initiatives could put a check on incidents of bird poaching in the state.
- Poaching of migratory birds has been quite rampant in Bihar as they fetch a lot of money for bird catchers.
- They are mostly sold to lovers of wild game for prices ranging between Rs 500 and Rs 1,500.

## 5.4. India's renewable energy park on its border with Pakistan

- Context: On December 15, Prime Minister will travel to Kutch to lay the foundation stone for a 30,000 MW (megawatt) hybrid renewable energy park close to the Indo-Pak border in Kutch district. The project is billed as the largest of its kind in the world.

### What is this hybrid renewable energy park taking shape in Gujarat?

- With the Government of India committing itself to installing 175 GW of renewable energy capacity by 2022, the Gujarat government identified 1,00,000 hectares of wasteland near Khavda, 72 km north of Bhuj, close to the international border with Pakistan in Kutch, for an energy park.
- In April 2020, after taking into consideration the requirements of the defence forces, the Ministry of Defence (MoD) gave its approval to use 72,600 hectares of the identified land to build the park.
- The renewable energy park will have two zones:
  - ✓ 49,600-hectare hybrid park zone that will accommodate wind and solar power plants of 24,800 MW capacity;
  - ✓ An exclusive wind park zone spread over 23,000 hectares.

### How close is this project to the Indo-Pak border?

- The project site is about 25 km from Khavda, which is the last point that can be accessed by civilians in the area.
- The exclusive wind park zone will come up within 1-6 km of the international border.
- The hybrid park zone will be located 6 km from the border.
- The Border Security Force is already present in the area.
- The site has been chosen because this is a complete wasteland.
- Secondly, if you put windmills near the border, they also act as a boundary.
- The entire 23,000 ha at the exclusive wind zone park has been allotted to Solar Energy Corporation of India (SECI) to set up wind projects under the competitive bidding route policy.
- The selected developers have to develop 50 per cent of the total generation capacity in the next three years, and finish the project in five years.
- Power Grid Corporation of India will evacuate the power produced at this park.

## 5.5. Committee for Implementation of Climate Change Targets

- The Centre has set up a committee which will oversee the implementation of climate change targets that India has committed to under the 2015 Paris Agreement.
- The Ministry of Environment, Forest and Climate Change (MoEFCC) issued a Gazette notification on forming a high-level inter-ministerial Apex Committee for Implementation of Paris Agreement (AIPA).
- The purpose of the AIPA is to generate a coordinated response on climate change matters which ensures that India is on track to meet its obligations under the Paris Agreement, including its Nationally Determined Contributions (NDC's).
- India has made eight commitments under the NDC, which has three quantitative goals.
  - ✓ Reduction in the emissions intensity of gross domestic product (GDP) by 33-35 per cent over 2005 levels by 2030.
  - ✓ Achieving about 40 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
  - ✓ Creating an additional carbon sink of 2.5 to 3 billion tonne of carbon dioxide equivalent through additional forest and tree cover by 2030.

### ROAD TO PARIS

- ▶ The Centre issued a Gazette notification to set up an inter-ministerial committee for tracking climate change initiatives
- ▶ Committee to have members from 14 ministries/departments of the Central govt

- ▶ To be chaired by Secretary in the ministry of environment, forest & climate change
- ▶ Committee given 16 functions and powers to call upon any government, non-government official for assistance, commission research projects

- ▶ India has committed to achieving eight climate change goals in the Paris Agreement. The three quantitative ones are:
1. 40 per cent of electricity demand to be sourced from non-fossil fuel sources
  2. Reduce emissions intensity of GDP by 33-35 per cent, by 2030
  3. Additional carbon sink of 2.5 to 3 billion tonne of carbon dioxide equivalent through additional forest and tree cover by 2030

- AIPA would operate as a national authority to regulate carbon markets in India, formulate guidelines for consideration of projects or activities, issue guidelines on carbon pricing, market mechanism, and other similar instruments that have a bearing on climate change and NDCs.
- It will also take note of the contribution made by the private sector as well as multi- and bi-lateral agencies in the field of climate change and provide guidance for aligning their climate actions with national priorities.
- The AIPA will have members from 14 ministries and will be chaired by the MOEFCC secretary.
- The constituent ministries include health, power, renewable energy, finance, science & technology, jal shakti, earth sciences, urban affairs, rural development, commerce & industry, apart from the government's policy think-tank, the NITI Aayog.

## 5.6.Cheetah: The Comeback

- Dehradun-based Wildlife Institute of India (WII) has started the process of evaluating sites to reintroduce cheetah to India's wilds.
- The cheetah was declared extinct from India in 1952.
- The animal is considered vulnerable under the International Union for Conservation of Nature's (IUCN) red list of threatened species, with a declining population of less than 7,000 found primarily in African savannas.
- Maharaja Ramanuj Pratap Singh Deo of Koriya is believed to have hunted and shot the last three recorded Asiatic cheetahs in India in 1947.
- Now, over 70 years later, the fastest land animal appears set to make a comeback in India.
- In 2009, the then minister for environment and forests, had initiated the Cheetah Reintroduction Project, but it was stayed by the Supreme Court in 2012 on the grounds that the African cheetah was an alien and exotic species and because the National Board for Wildlife, the apex wildlife body in the country, had not been consulted in the matter.
- In January 2020, though, after the National Tiger Conservation Authority (NTCA) filed a petition, the Supreme Court finally allowed the Centre to introduce the African cheetah to a suitable habitat in India.
- A committee under the Ministry Of Environment And Forests (MoEF), has been set up under the orders of the apex court to monitor the implementation of the project.
- The committee has asked the WII to carry out a technical evaluation of all possible sites.
- Madhya Pradesh, Rajasthan and Bihar are eager to host the big cats in their respective forest reserves, and a fourth state, Gujarat, is still evaluating sites.
- While Madhya Pradesh and Rajasthan were part of the original plan, Bihar is a newly involved state.
- The MoEFCC had written to all states to come up with a proposal for potential sites.
- The Rajasthan forest department has proposed the Shahgarh Bulge near Jaisalmer on the India-Pakistan border, which was under consideration in the earlier version of the plan too.




# CHEETAH

## *Acinonyx jubatus*

**Jagluiperd      iHlosi**

**Shoulder Height : 75cm      Mass : 55-59kg**

Distribution is wide but highly fragmented. Mainly in northern parts of southern Africa and East Africa. Found in a wide variety of habitats but prefers open grasslands and light woodland.

Previous classification as vermin led to dramatic reduction in numbers. Habitat loss and genetic bottlenecking are the main factors causing rapid population decline

Diurnal, active early morning and late afternoon preying on medium-sized antelope, guinea fowl, hares

Solitary, male coalitions, or female with cubs. Gestation is 90 days. Avg litter size 2-4 high cub mortality



NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX

THE IUCN RED LIST OF THREATENED SPECIES

- However, the Ministry Of Defence has expressed concerns over allowing tourist movement so close to the border. Plus, the area is also used by the defence forces for strategic movement and they are reluctant to let the cheetah introduction disturb that. Besides, it is also a site for oil and gas exploration, which may not be conducive to cheetah movement.
- Among other potential sites was Bihar, offering the Kaimur district on its southwestern border as a potential site. The region is said to have a substantial black buck population that would serve as prey base for the cheetah.
- The tourism potential of the cheetah project is not lost on the states. The reintroduction would be as much an economic operation as a conservation operation.
- The cheetahs would promote tourism in the area, create jobs and income for locals.
- What tigers did for protection of forests, cheetahs will do for grasslands that are under immense threat
- The Union government, too, has shown considerable interest in the project and a Rs 2.4 crore outlay was made for the Cheetah Project recently.



## 6. Science & Technology

Click [here](#) to watch the following questions on YouTube

### 6.1. Emergency use authorization

● Context:

- ✓ US drugmaker Moderna was applying for emergency use authorisation for its Covid-19 vaccine.
- ✓ A few days earlier, Pfizer applied for emergency use authorisation for the vaccine it has developed in collaboration with BioNTech.
- ✓ In India, Serum Institute of India, which is trialing a version of the AstraZeneca-Oxford vaccine, has said it expects to seek emergency use authorisation within the next two weeks.

#### What is emergency use authorisation (EUA)?



- Vaccines and medicines, and even diagnostic tests and medical devices, require the approval of a regulatory authority before they can be administered.
- In India, the regulatory authority is the Central Drugs Standard Control Organisation (CDSCO).
- For vaccines and medicines, approval is granted after an assesment of their safety and effectiveness, based on data from trials.
- The approval from the regulator is required at every stage of these trials.
- This is a long process, designed to ensure that a medicine or vaccine is absolutely safe and effective.
- The fastest approval for any vaccine until now – the mumps vaccine in the 1960s – took about four-and-a-half years after it was developed.
- In emergency situations, like the current one, regulatory authorities around the world have developed mechanisms to grant interim approvals if there is sufficient evidence to suggest a medical product is safe and effective.

- Final approval is granted only after completion of the trials and analysis of full data; until then, Emergency Use Authorisation (EUA) allows the medicine or the vaccine to be used on the public.

### **When can EUA be granted?**

- In the US, the Food and Drug Administration (FDA) grants an EUA only after it has been determined that the “known and potential benefits outweigh the known and potential risks of the vaccine” (or medicine).
- This means that an EUA application can be considered only after sufficient efficacy data from phase 3 trials had been generated.
- An EUA cannot be granted solely on the basis of data from phase 1 or phase 2 trials, although these too need to show the product is safe.
- For Covid vaccines, the FDA has specified that it would consider an application for EUA only if phase 3 data showed it was at least 50% effective in preventing the disease.

### **What is the process of getting an emergency use authorisation in India?**

- Experts and activists say India’s drug regulations do not have provisions for an EUA, and the process for receiving one is not clearly defined or consistent.
- Despite this, CDSCO has been granting emergency or restricted emergency approvals to Covid-19 drugs during this pandemic – for Remdesivir and Favipiravir in June, and Itolizumab in July.
- Some of the drugs that have received restricted emergency approvals in India, like Itolizumab, were not subsequently included in the country’s Covid-19 Clinical Management Guidelines.

### **How often has EUA been granted?**

- EUA is a relatively recent phenomenon.
- FDA granted its first EUA for the civilian population in 2009 for the use of Tamiflu drug for infants and young children for the treatment of H1N1 infection.
- Since then, EUAs have been granted for several medicines, diagnostics, and equipment like ventilators or even PPEs, but never for a vaccine.
- An EUA can be granted only in a declared public health emergency; previous EUAs came during the spread of the Ebola virus, Zika virus and MERS coronavirus.
- Remdesivir or faviparir, which received EUA for treatment of Covid-19, including in India, are existing drugs approved for other ailments.
- They could not be administered to Covid-19 patients without extensive trials, but because they showed promise in limited testing, in specified conditions, they were therefore “repurposed” for Covid-19 patients through EUAs.

### **Is there a risk in using a product that has only been granted an EUA?**

- According to the US FDA, the public has to be informed that a product has only been granted an EUA and not full approval.
- In the case of a Covid-19 vaccine, for example, people have to be informed about the known and potential benefits and risks, and the “extent to which such benefits or risks are unknown”, and that they have a right to refuse the vaccine



- There has been an ongoing debate over whether people have the option of refusing to take the vaccine.
- Incidentally, no country has made vaccination compulsory for its people.
- Initially, all vaccines are likely to be deployed on emergency use authorisations only.
- Final approval from respective authorities may take several months, or years.

## 6.2. Rocket Booster from 1966 Become a Near-earth Object

- Context: NASA has confirmed that the Near-Earth Object called 2020 SO is the rocket booster that helped lift the space agency's Surveyor spacecraft toward the Moon in 1966.
- Scientists concluded that the object is in fact the rocket booster, after more than 170 measurements of the object's position were analysed over the course of three months by observatories across the world.

### So what was Surveyor-2?

- The Surveyor-2 spacecraft was supposed to make a soft landing on the Moon's surface in September 1966, during which time one of the three thrusters failed to ignite as a result of which the spacecraft started spinning and crashed on the surface.
- The aim of the mission was to reconnoiter the lunar surface ahead of the Apollo missions that led to the first lunar landing in 1969.
- While the spacecraft crashed into the Moon's surface, the rocket booster disappeared into an unknown orbit around the Sun.

### How was the object determined to be the rocket booster?

- Astronomers track asteroids using telescope to determine if there are potentially hazardous asteroids that pose a threat to the planet.
- Therefore, it is also important for them to be able to distinguish between natural and artificial objects that orbit around the Sun.
- The rocket booster has come "somewhat close" to the Earth in the past few decades.
- One approach to the Earth in late 1966 was so close that the object was thought to have originated from Earth.
- In September, the NASA-funded Pan-STARRS1 telescope detected an unknown object which followed a curved path in the sky, indicating its proximity to the Earth.
- Initially, the object was thought to be an asteroid orbiting the Earth and was hence given a name by the Minor Planet Center.
- Following this, scientists from the Center for Near-Earth Object Studies (CNEOS) observed that the orbit was not a normal asteroid's, since asteroid orbits are more tilted and elongated relative to the Earth's.
- But as per NASA, 2020 SO's orbit around the Sun was similar to that of the Earth's, "was at about the same distance, nearly circular, and in orbital plane that almost exactly matched that of our planet-highly unusual for a natural asteroid."

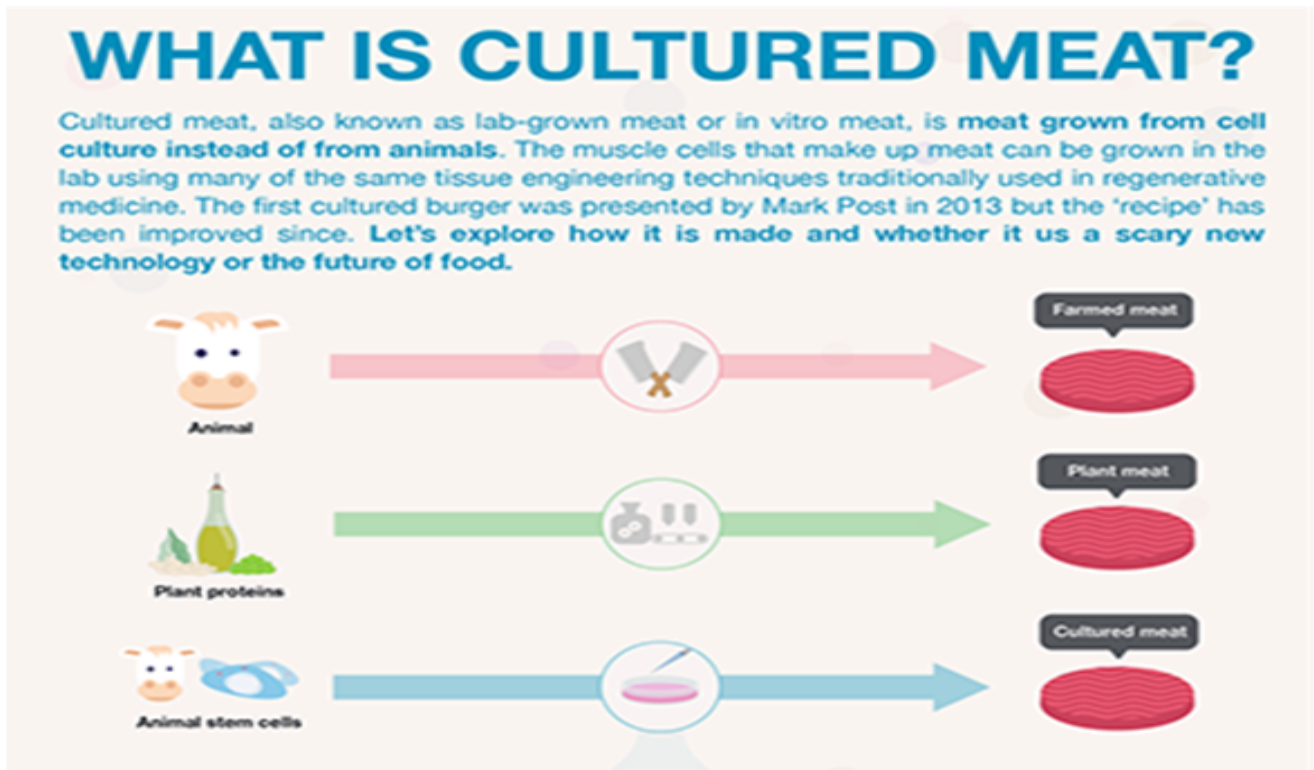
- On November 8, the booster drifted into the Earth's sphere of dominant gravitational force, in a region called the Hill Sphere.
- 2020 SO will remain in this region for over four months before it takes on a new orbit around the Sun in March 2021.
- It made its closest approach to the Earth on December 1 allowing scientists to study its composition and know for sure that the object was in fact the rocket booster.
- Astronomers will now continue to study it until it is gone.

## 6.3.China's Quantum Computer

- Context: Chinese scientists claim to have built a quantum computer which is 100trillion times faster than the world's most advanced supercomputer - Japan's Fugaku.
- The prototype is able to perform a calculation which would take a traditional computer billions of years to figure out.
- The breakthrough means the country has achieved quantum supremacy, a significant milestone as China and the US compete to lead in quantum computing technology.
- It comes as late last year tech giant Google claimed to have demonstrated superiority over conventional machines.
- Quantum computing is a fledgling technology which uses the weird world of quantum physics to achieve vastly speed-up information processing.
- Normal, 'classical' computers store data as so-called 'bits' that can either be a '0' or a '1'.
- Quantum bits – qubits – instead can be both at once.
- This allows groups of qubits in a quantum computer to store more data using less energy than a classical computer could using the same number of bits.
- The researchers have built a quantum computer prototype that is able to detect up to 76 photons through Gaussian boson sampling, a standard simulation algorithm
- Six years in the making and \$1billion: Japan's Fugaku 'world's fastest' supercomputer
- In June 2020, Japan took the lead in the supercomputer race, with a machine which is 2.8 times faster than the previous title holder.
- The Fugaku supercomputer was developed by research institute RIKEN and Fujitsi Ltd and the processor technology comes from UK-based ARM.
- The previous top-ranked system as of November 2019 was at Oak Ridge National Laboratory in the United States with chips designed by IBM.
- As well as helping simulate nuclear blasts and model climate systems, the Fugaku machine has been working on the fight against COVID-19.
- Such devices may one day revolutionise tasks that would take normal computers years, such as seeking new drugs and optimising city and transportation planning.
- A supercomputer can deliver large numbers of computing cycles per second.

- A quantum computer aims to utilise new quantum algorithms to accelerate digital computation.
- In 2019, Google claimed it had developed a processor - named Sycamore - that performs in three minutes and 20 seconds work that would take classical computers 10,000 years.
- In a bid to win the tech race, China is building a new National Laboratory for Quantum Information Sciences, costing \$10 billion.

## 6.4.Lab-grown meat



### Why is this a big deal?

- In its June 2020 Food Outlook Report, the UN Food and Agriculture Organisation (FAO) stated that world meat output was set to contract row to 333 million tonnes, 1.7% less than in 2019.
- The disruption has been caused mainly by Covid-19, but it has added to already widespread fears about zoonotic diseases, especially African swine fever and highly pathogenic avian influenza.
- This provides an opportunity to the alternative meat industry.
- According to a Nielsen report from May this year, the sale of plant-based meats, which have been available in retail outlets and restaurants since 2018, grew by 264% in the US over a nine-week period that ended May 2.
- The market for alternative proteins was growing even before the pandemic: in a 2019 report, Barclays predicted that alternative meat could capture 10% of the \$1.4-trillion global meat market over the next decade.
- This is why the approval by Singapore to cultured chicken is seen as significant.

# WORLD'S FIRST LAB-GROWN BEEF BURGER



- World's first lab grown Burger was tasted in London on **Aug 5, 2013**.
- Google co-founder, **Sergey Brin**, has donated **\$330,000** for this Research.
- **50** people were involved in this kind of research worldwide, mainly in the **Netherlands** and **North America**.

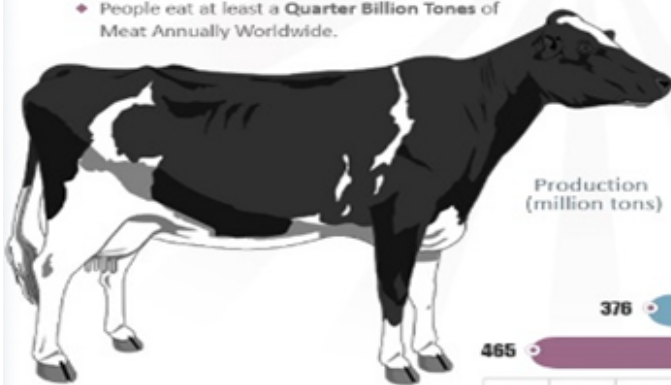
## METHOD FOR LAB PREPARATION

- Cells from cow muscle tissue.
- Cultured with nutrients and growth promoting chemicals to multiply.
- More than a million stem cells develop.
- Coalesced into small strips of muscle (centimetre long and few millimetres thick).
- Strips are collected into pellets which are frozen
- Defrosted pellets compact into patty
- 20,000 strips to make a single 5-ounce patty

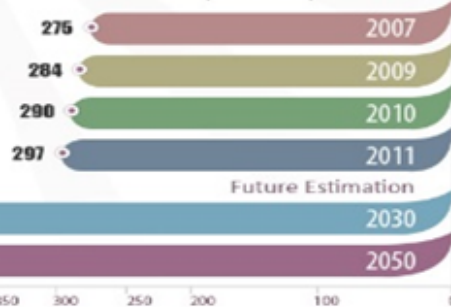
# ARTIFICIAL MEAT

## The Why's and the How's

- The demand for Meat, for a growing Global Population, is expected to rise above the supply for it.
- **70 %** of the world population is partially or completely dependent on livestock for their livelihood and food security.
- People eat at least a **Quarter Billion Tones** of Meat Annually Worldwide.



### MEAT PRODUCTION (world stats)



### AVERAGE CONSUMPTION

Meat consumption is growing in the developing world and is still on the increase in developed countries.

In Wealthy nations: **78.9** kg per person

In Developing nations: **32.3** kg per person

## How is lab-grown or cultured meat different from plant-based meat?

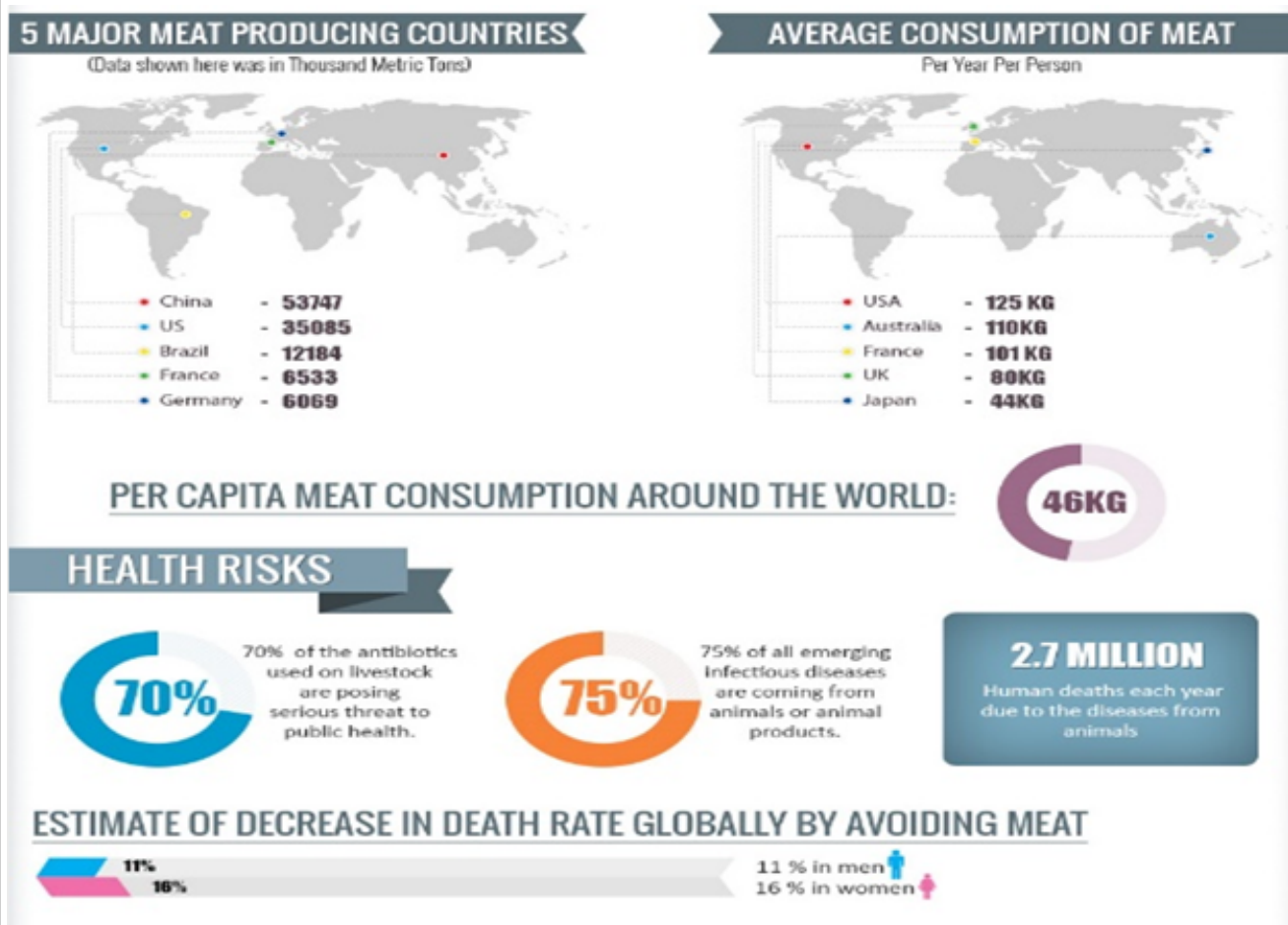
- The latter is made from plant sources such as soy or pea protein, while cultured meat is grown directly from cells in a laboratory.
- Both have the same objective: to offer alternatives to traditional meat products that could feed a lot more people, reduce the threat of zoonotic diseases, and mitigate the environmental impact of meat

consumption.

- In terms of cellular structure, cultured or cultivated meat is the same as conventional meat – except that cultured meat does not come directly from animals.
- The report adds that since cultivated meat is created in clean facilities, the risk of contamination by pathogens such as salmonella and E coli, which may be present in traditional slaughterhouses and meat-packing factories, is significantly reduced.
- It does not require antibiotics either, unlike animals raised for meat, thereby reducing the threat posed to public health by growing antibiotic resistance.
- Conventional meat still dominates the market, and industry lobbies have been fighting to hold on to their market, not least by challenging the very idea of alternative meats.

## 6.5.China’s ‘artificial sun’

- Context: China successfully powered up its "artificial sun" nuclear fusion reactor for the first time, marking a great advance in the country's nuclear power research capabilities.
- The HL-2M Tokamak reactor is China's largest and most advanced nuclear fusion experimental research device, and scientists hope that the device can potentially unlock a powerful clean energy source.
- It uses a powerful magnetic field to fuse hot plasma and can reach temperatures of over 150 million degrees Celsius, approximately ten times hotter than the core of the sun.





- Unlike fission, fusion emits no greenhouse gases and carries less risk of accidents or the theft of atomic material.
- But achieving fusion is both extremely difficult and prohibitively expensive, with the total cost of ITER estimated at \$22.5 billion.