UPSC CURRENT AFFAIRS - 2018

NOVEMBER 1-15(Part – I)

HINDU & PIB IN DEPTH ANALYSIS

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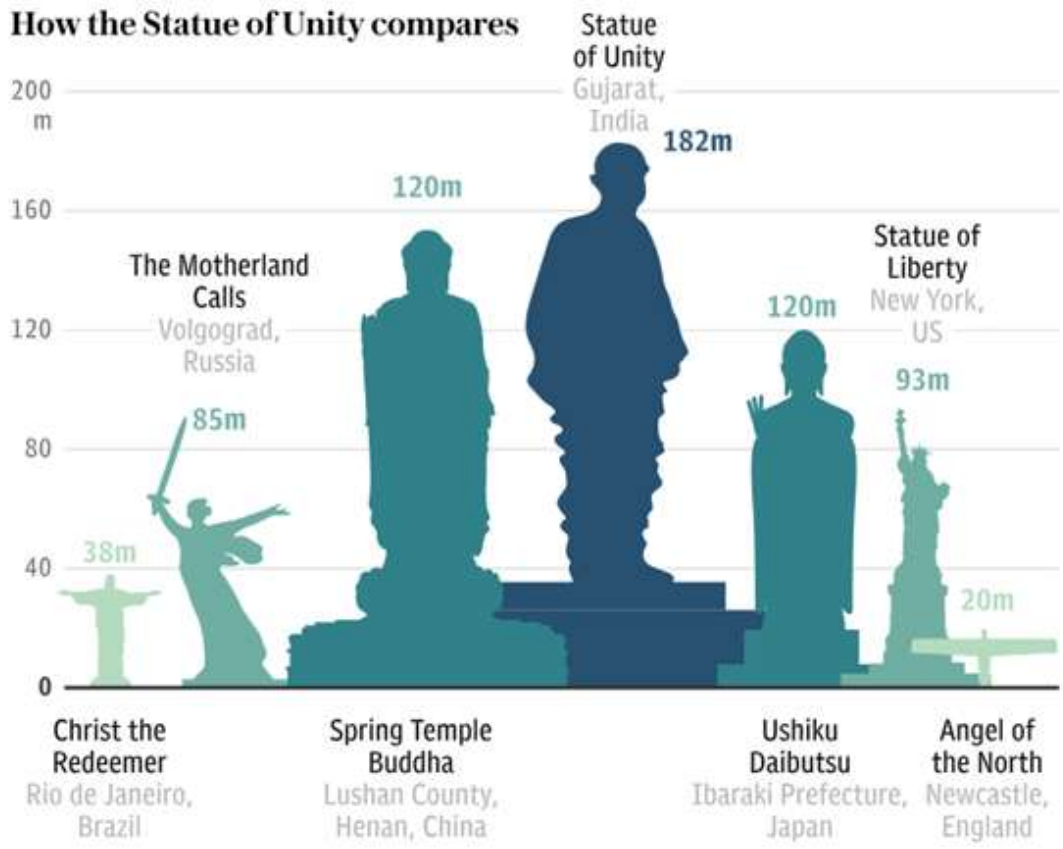
GENERAL STUDIES 1

ART AND CULTURE

Statue of Unity

IN NEWS:

- The Statue of Unity, a tribute to Sardar Vallabhbhai Patel, is 177 feet higher than China's Spring Temple Buddha, which was the tallest statue till now.
- It is located on the river island called Sadhu Bet near Rajpipla, Gujarat.



IN DEPTH:

ABOUT THE STATUE OF UNITY:

- **Height**: 182 metres. This makes the statue almost twice the height of the iconic Statue of Liberty in New York.
- **Location**: Around 3.5 km downstream from the Sardar Sarovar Dam, on islet Sadhu Bet on the bed of the river Narmada.
- **Cost**: 2,989 crore (approx)
- **Sculptor**: Padma Bhushan Ram V. Suthar, a 93-year-old acclaimed sculptor . He has sculpted masterpieces including that of Mother Chambal at Gandhi Sagar Dam in Madhya Pradesh, equestrian statue of Maharaja Ranjit Singh in Amritsar, and numerous statues of Mahatma Gandhi.

- **Construction period**: 34 months. Work began on December 19, 2015.
- **Materials consumed**: 70,000 tonnes of cement, 18,500 tonnes of reinforcement steel, 6,000 tonnes of structural steel and 1,700 metric tonnes of bronze, which was used for the outer cladding of the structure, according to a government statement.
- **Specialities**: The statue is slender most at the base, which goes against the norms of what other tall statues have followed. The walking pose also opened up a gap of 6.4 metres between the two feet which then had to be tested to withstand wind velocity, says L&T.
- Engineered to withstand wind speeds of up to 50 m per second (almost 180 km per hour wind speed)
- The viewing gallery at the height of 135 metres can accommodate up to 200 people at a time.

ABOUT VALLABHAI PATEL:

- Vallabhbhai Patel (October 31, 1875 – December 15, 1950) was a political and social leader of India who played a major role in the country's integration into a united, independent nation.
- He was called the "Iron Man of India", and was often addressed as "Sardar" which means "Chief" or "Leader" in many languages of India.
- Vallabhbhai Patel already had a successful practice as a lawyer when he was first inspired by the work and philosophy of Mahatma Gandhi.
- Patel subsequently organised the peasants of Kheda, Borsad, and Bardoli in Gujarat in a non-violent civil disobedience movement against oppressive policies imposed by the British Raj; in this role, he became one of the most influential leaders in Gujarat..
- As the first Home Minister and Deputy Prime Minister of India, Patel organised relief for refugees in Punjab and Delhi, and led efforts to restore peace across the nation.
- Patel took charge of the task to forge a united India from the 565 semi-autonomous princely states and British-era colonial provinces. Using frank diplomacy backed with the option (and the use) of military action, Patel's leadership enabled the accession of almost every princely state.
- Hailed as the Iron Man of India, he is also remembered as the "Patron Saint" of India's civil servants for establishing modern all-India services. Patel was also one of the earliest
- proponents of property rights and free enterprise in India.

Konark Sun Temple

IN NEWS:

- The Sun Temple, an ASI-protected world heritage site, is known for its outstanding architecture.
- Recently, there are some allegations that the original stone carvings in the temple, as per media reports, had been removed and in their place, plain stones had been fixed.

IN DEPTH:

- **Konark Sun Temple** is a 13th-century CE sun temple at Konark about 35 kilometres (22 mi) northeast from Puri on the coastline of Odisha, India.
- The temple is attributed to king Narasingha deva I of the Eastern Ganga Dynasty about 1250 CE.
- Dedicated to the Hindu 'god Surya, what remains of the temple complex has the appearance of a 100-foot (30 m) high chariot with immense wheels and horses, all carved from stone.
- Once over 200 feet (61 m) high, much of the temple is now in ruins, in particular the large shikara tower over the sanctuary; at one time this rose much higher than the mandapa that remains.
- The structures and elements that have survived are famed for their intricate artwork, iconography, and themes, including erotic kama and mithuna scenes. Also called the *Surya Devalaya*, it is a classic illustration of the Odisha style of Hindu templearchitecture.
- Konark Sun temple represents the climax of Odishan temple architecture. It symbolises Odia pride and reflects the ethical and emotional expression of the Odia people.

GENERAL STUDIES 2

GOVERNANCE

SC: live-in partner can seek maintenance

IN NEWS:

According to a recent Supreme Court order –

- A live-in partner can seek maintenance under the Domestic Violence Act.
- The 2005 Act provides an "efficacious remedy" for maintenance even if the victim is not a legally wedded wife.

IN DEPTH:

About the Domestic Violence Act, 2005

- The function of the law was to be simple—address violence against women within the home.
- It is considered a landmark Act because for the first time, an act stepped inside the home and dealt with private spaces of individuals—something the law had avoided doing until then.
- The Act defined domestic violence for the first time – The definition includes not just physical abuse, which is more identifiable and is easier to prove (for example, using medical records), but also aspects like emotional and sexual abuse. It even includes threat of violence as part of the definition.
- One of the main objectives of DVA was to secure residence for a woman; it was immaterial that she didn't have title or ownership of such a shared household.

The Act provides for four fold support system to women who have suffered violence at home:

- Residence orders,
- custody orders,
- protection orders and
- monetary relief from a respondent.

Loans for MSMEs in 59 minutes

IN NEWS:

- PM Modi announced **12 measures to boost** the Micro, Small and Medium Enterprises **(MSME) sector**, including a portal that would enable the units to get a **loan in just 59 minutes** and **interest subvention of 2%.**

IN DEPTH:

59 MINUTE LOAN PORTAL :

- The Prime Minister announced the launch of the 59 minute loan portal to enable easy access to credit for MSMEs.
- He said that loans upto Rs. 1 crore can be granted in-principle approval through this portal, in just 59 minutes.
- He said a link to this portal will be made available through the GST portal. The Prime Minister asserted that in New India, no one should be compelled to visit a bank branch repeatedly.
- More than 72,000 loans worth over Rs 23,852 crore have been sanctioned.
- The portal is set up by the **Small Industries Development Bank of India**. MSMEs can register and apply for a loan.

- The loans are undertaken without human intervention till sanction and or disbursement stage.
- A User Friendly Platform has been built where MSME borrower is not required to submit any physical document for in-principle approval.
- The solution uses sophisticated algorithms to read and analyse data points from various sources such as IT returns, GST data, bank statements, MCA21 etc.
- In less than an hour while capturing the applicants basic details using Smart analytics from available documents. The system simplifies the decision making process for a loan officer as the final output provides a summary of credit, valuation and verification on a user-friendly dashboard in real time.

OTHER 12 INITIATIVES :

The prime minister unveiled 12 initiatives for MSMEs, which he called "Diwali gifts". They are:

1. Loans for MSMEs up to Rs 1 crore can be granted in 59 minutes, which can also be availed through goods and services tax portal.
2. A 2 percent interest subvention will be given on incremental and new loans to GST-registered MSMEs. For exporters who receive loans in pre- and post-shipment period, an increase in interest rebate has been given from 3-5 percent.
3. All public-sector companies and corporates with turnover exceeding Rs 500 crore will have to mandatorily register on Trade Receivables Electronic Discounting System portal. This will improve the cash cycle for MSMEs as it will enable entrepreneurs to access credit from banks, based on their upcoming receivables.
4. Public-sector undertakings will have to buy their 25 percent of their inputs from MSMEs from 20 percent earlier.
5. Of the 25 percent, 3 percent of procurement will have to done by women entrepreneurs or women-led MSMEs.
6. All central public sector enterprises will have to come on board of Government e-Marketplace so that they can procure goods from MSMEs listed on the portal.
7. Technology upgradation support will be given to MSMEs. About 20 technological centres will be made as hubs and 100 centres as tool rooms will be created at the cost of Rs 6,000 crore.
8. Clusters will be created for pharma MSME companies so that they can reach customers directly. About 70 percent of the cost for creating these clusters will be borne by the central government.
9. MSMEs will have to file only one return under eight labour laws and 10 central rules against two returns earlier.
10. Inspection would be done based on computerised random allotment and report of inspection will have to be submitted within 48 hours on the reporting portal. This will free MSMEs from Inspector Raj (regime), Modi said.
11. Process of environmental clearance has been simplified, and MSME will require only one approval for "environmental clearance" and "consent to establish" under Air and Water Act.
12. Ordinance has been approved for simplifying levy of penalty for minor offences under Companies Act. This will avoid unnecessary harassment to small business owners, and they won't have to approach courts, but can correct minor violations through simple procedures.

Speedy trial through Special courts

IN NEWS:

- Special courts have helped to deal with speedy trials.
- Special courts for Protection of Children from Sexual Offences Act (POCSO) cases sets example with speedy trial. (After its set up in April, it has awarded conviction in 18 POCSO cases)

IN DEPTH:

FEAURES OF SPECIAL COURTS:

- Special courts have existed in the subordinate judiciary since before Independence.
- A special court is one which is to deal with special types of cases under a shortened and simplified procedure.
- They are established under a statute meant to address specific disputes falling within that statute.
- Over 25 special courts were set up between 1950 and 2015 through various Central and State legislations.

SOME EXAMPLES:

- **Debt recovery tribunal**
- **Consumer court**
- **Family court**

Water ATMs

IN NEWS:

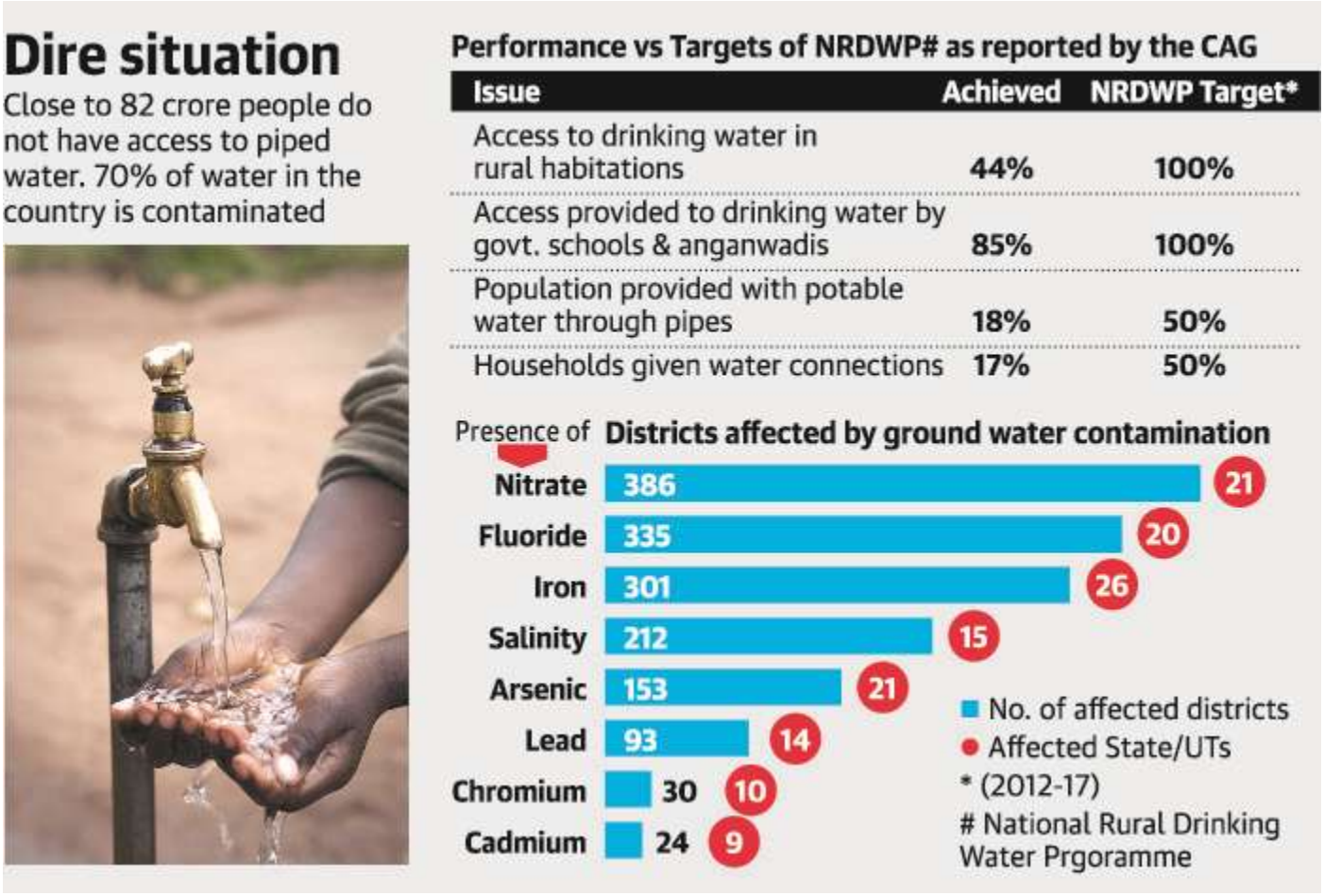
- Government has started to accept small water enterprises — such as water ATMs and community purification plants — as an alternative solution to the safe drinking water challenge.
- Water ATMs may help in bridging safe water gap.

IN DEPTH:

VARIOUS REPORTS ON WATER QUALITY:

- **India is ranked at 120 out of 122 countries on the Water Quality Index**.
- Niti Aayog, adding that 70% of the country's water supply is contaminated.
- A recent report by the Comptroller and Auditor General of India (CAG) pointed out that only 18% of the rural population has access to potable piped water, failing to meet the 2017 target of 50%.
- To reach the government's **Har Ghar Jal target of 100% piped water by 2030**, almost □5 lakh crore of infrastructure investment will be required, says government data.

WATER QUALITY INDEX:

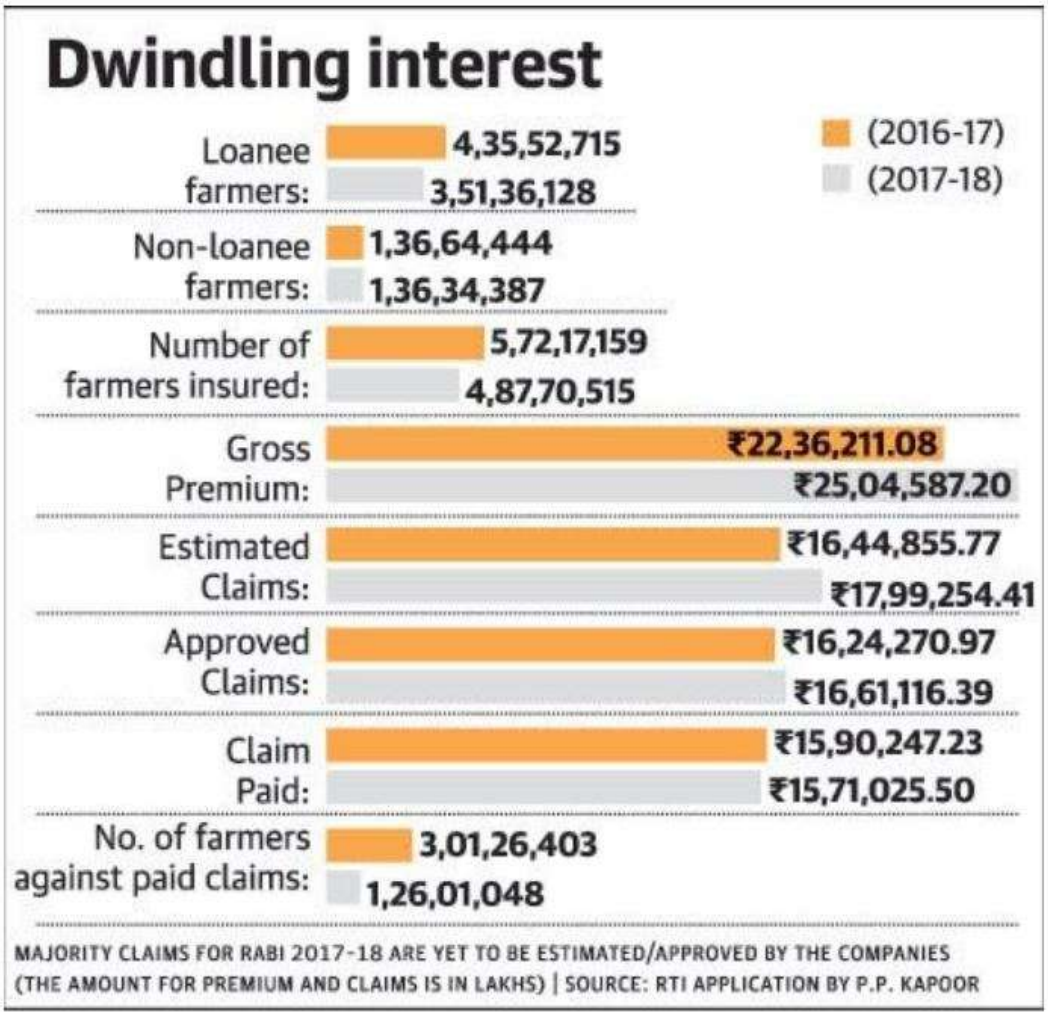


Pradhan Mantri Fasal Bima Yojana (PMFBY): Crop Insurance Scheme

IN NEWS:

- Pradhan Mantri Fasal Bima Yojana (PMFBY) was launched in April 2016, with the aim of bringing 50 per cent of the country's farmers under insurance cover in three years.
- However, the scheme has not been received well by farmer associations.
- More than 84 lakh farmers or around 15% of the total farmers who were insured in the first year of PMFBY (in 2016-17) withdrew themselves from the scheme in 2017-18.
- There are many reasons for this. One, while loanee farmers get mandatorily enrolled in the scheme, there is not enough effort taken to cover the non-loanee farmers.
- It is alleged that the crop insurance scheme is benefiting the private insurance companies in the name of farmers.

IN DEPTH:



Background:

- Pradhan Mantri Fasal Bima Yojana (PMFBY) was launched in April 2016
- Government scraped down the earlier insurance schemes viz. Modified National Agricultural Insurance Scheme (MNAIS), Weather-based Crop Insurance scheme and the National Agriculture Insurance Scheme (NAIS) and made PMFBY the only flagship scheme for agricultural insurance in India.
- The scheme was launched with the aim of bringing 50 per cent of the country's farmers under insurance cover in three years.

Key Features of Scheme

- Under this scheme, farmers need to pay uniform premium of only 2% for all Kharif crops and 1.5% for all Rabi crops.
- In case of annual commercial and horticultural crops, farmers have to pay premium of only 5%.
- The premium rates to be paid by farmers are very low and balance premium will be paid by Government.
- Moreover, there is no upper limit on Government subsidy, so farmers will get claim against full sum insured without any reduction.
- Earlier, there was a provision of capping the premium rate which resulted in low claims being paid to farmers. This capping was done to limit Government outgo on the premium subsidy. This capping has now been removed and farmers will get claim against full sum insured without any reduction.

- The use of technology will be encouraged to a great extent. Smart phones will be used to capture and upload data of crop cutting to reduce the delays in claim payment to farmers. Remote sensing will be used to reduce the number of crop cutting experiments.
- PMFBY is a replacement scheme of NAIS / MNAIS, there will be exemption from Service Tax liability of all the services involved in the implementation of the scheme. It is estimated that the new scheme will ensure about 75-80 per cent of subsidy for the farmers in insurance premium.

Objectives:

- To provide insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests & diseases.
- To stabilise the income of farmers to ensure their continuance in farming.
- To encourage farmers to adopt innovative and modern agricultural practices.
- To ensure flow of credit to the agriculture sector.

INTERNATIONAL RELATIONS

India and Italy: Defence Meeting

IN NEWS:

- India invited Italy to participate in the defence sector under the 'Make in India' scheme.
- India and Italy held the 9th Military Group Meeting earlier in October in which they agreed on cooperation in 2019.
- Both countries sign agreement to curb terror financing.
- First time the two countries have agreed on joint defence production since the AugustaWestland case exploded in 2013.

India, China and Pakistan: India protests China-Pakistan bus via PoK

IN NEWS:

- India reiterates its opposition to a proposed luxury bus service between Pakistan and China that would pass through parts of Pakistan-occupied Kashmir and Gilgit-Baltistan — territory that India claims — terming it "a violation of India's sovereignty.
- China says move part of 'China-Pakistan Economic Corridor' (CPEC), doesn't reflect Beijing's position on Kashmir.
- Pakistan is expected to receive a $6 bn aid package from China during PM Imran's visit.
- Pakistan's Prime Minister has reinforced Islamabad's bonds with Saudi Arabia, and has kept the door open for the re-entry of West-backed International Monetary Fund (IMF) into his country.

IN DEPTH:

BELT & ROAD INITIATIVE:

- The Belt and Road Initiative is a Chinese foreign policy initiative promoted by president Xi Jinping in 2013
- Initially the idea of **Silk Road Economic Belt (SREB)** and **Maritime Silk Road (MSR)** was put forward
- Subsequently, the two projects together came to be known as 'One Belt One Road' (OBOR) Initiative. Later, it came to be known as Belt and Road Initiative (BRI)
- **Aim of BRI**: Build a trade, investment, and infrastructure network connecting Asia with Europe and Africa along the ancient trade routes
- The Communist Party of China (CPC) has incorporated Belt and Road Initiative into the Chinese Constitution

China's Belt & Road Initiative

China-Pakistan Economic Corridor (CPEC):

- The main reason for India's opposition to the BRI is the CPEC which is a flagship programme of the BRI
- The CPEC passes through Pakistan-Occupied Kashmir (Gilgit-Baltistan). As both India and Pakistan claim all of Kashmir, the area is considered a disputed territory by India. According to India, it undermines India's strategic interests and territorial integrity.

- Further, China will get access to western Indian Ocean with Gwadar port. This would facilitate China in controlling maritime trade and this could be detrimental to freedom of navigation and trade-energy security of India

Iran oil: India to get U.S. sanctions waiver

IN NEWS:

- **Eight countries will be given exemptions**, once U.S. sanctions against Iran kick in on November 5.
- India — for whom Iran is the third largest source of oil after Iraq and Saudi Arabia — is expecting to be on the list.

IN DEPTH:

ECONOMIC SANCTIONS:

- Economic sanctions are used as a tool of foreign policy by many governments.
- Economic sanctions are usually imposed by a larger country upon a smaller country for one of two reasons—either the latter is a threat to the security of the former nation or that country treats its citizens unfairly.
- They can be used as a coercive measure for achieving particular policy goals related to trade or for humanitarian violations.
- Economic sanctions are used as an alternative weapon instead of going to war to achieve desired outcomes.

India, Singapore begin sea drills

IN NEWS:

- 25th edition of the **India-Singapore bilateral naval exercise, SIMBEX**, had begun at the tri-services command in Port Blair.
- The two countries have vastly expanded their military cooperation in recent years under **India's Act East policy**.
- Late last year, the two countries signed a naval agreement which has a provision for mutual logistical support and gives India access to the **Changi naval base**.
- **It** Started as basic Anti-Submarine Warfare (ASW) exercises in 1994, today these exercises have graduated to complex maritime combat drills, including missile and torpedo firings, and shore-based intensive professional exchanges.
- India and Singapore are working on a trilateral exercise with an Association of South East Asian Nations (ASEAN) country, likely Thailand, and eventually plan to scale it up to a multilateral format.

Third Quad Round in Singapore

IN NEWS:

- 'Quadrilateral' grouping – India, Australia, Japan and the U.S.
- The Quad is billed as four democracies with a shared objective to ensure and support a "free, open and prosperous" Indo-Pacific region.
- Quad members to meet in Singapore soon. During this round, the four countries are expected to discuss infrastructure projects they are working on, and building humanitarian disaster response mechanisms.
- The four countries are expected to talk about regional developments, including elections in the Maldives, the collapse of the government in Sri Lanka and the latest developments in North Korea.
- However, despite the potential for cooperation, the Quad remains a mechanism without a defined strategic mission.

IN DEPTH:

Recent developments:

- India and Japan have announced combined efforts on a number of projects in South Asia, including bridges and roads in Bangladesh, an LNG facility in Sri Lanka and reconstruction projects in Myanmar's Rakhine province.
- Australia has unveiled an ambitious $2 billion project to fund infrastructure and build maritime and military infrastructure in the Pacific region, on which it is willing to cooperate with other Quad members.

Concerns:

- Quad members still face the challenge of defining its common agenda.
- The Quad grouping was first formed following cooperation after the 2004 tsunami, the idea was to better coordinate maritime capabilities for disaster situations.
- When revived in 2017, the grouping seemed to have become a counter to China's growing inroads into the region, despite denials that any particular country had been targeted.
- The entire focus on the Indo-Pacific makes the Quad a maritime, rather than land-based, grouping, raising questions whether the cooperation extends to the Asia-Pacific and Eurasian regions.
- Even on maritime exercises, there is a lack of concurrence. India has not admitted Australia in the Malabar exercises with the U.S. and Japan, despite requests from Australia, and has also resisted raising the level of talks from an official to the political level.

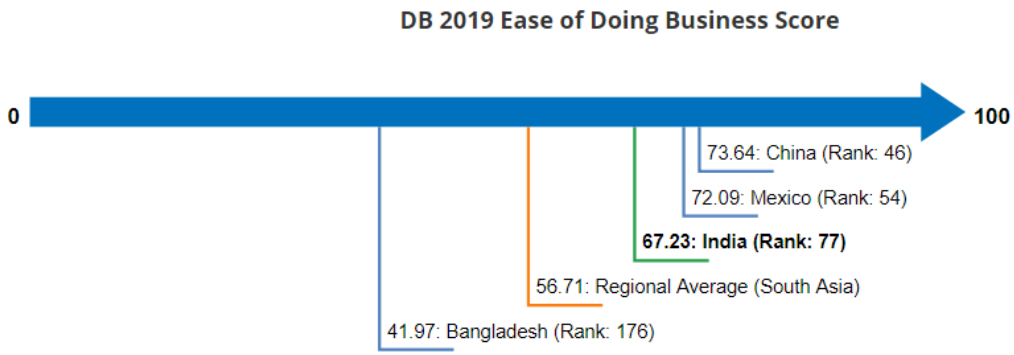
GENERAL STUDIES -3

ECONOMY

Ease of Doing Business Index: India jumps to 77th rank

IN NEWS:

- The index ranks 190 countries based on 10 indicators across the life-cycle of a business, from "starting a business" to "resolving insolvency." (observe figure below)
- India jumped 23 ranks in the World Bank's Ease of Doing Business Index 2019 to 77 (for 2018). In the 2018 report, the country was ranked 100 (for 2017).
- India became the top ranked country in South Asia for the first time and third among the BRICS.
- In the last two years the country has climbed 53 notches, a performance matched in the past only by Bhutan.
- The biggest gain was in construction permit where India climbed 129 ranks to 52nd place on the back of targeted government effort to remove hurdles.



IN DEPTH:

EASE OF DOING BUSSINESS INDEX:

- Ease of doing business is an index published by the World Bank.
- It is an aggregate figure that includes different parameters which define the ease of doing business in a country.
- It is computed by aggregating the distance to frontier scores of different economies. The distance to frontier score uses the 'regulatory best practices' for doing business as the parameter and benchmark economies according to that parameter.

India to export sugar to China

IN NEWS:

- India to export sugar to China in early 2019 à major boost to sugar mills sitting on surplus stocks. (Initial contract is to dispatch 50,000 tonnes)
- India is also engaged in talks to finalise exports to Indonesia and Malaysia as well.

IN DEPTH:

- Raw sugar is the second product after non-basmati rice that China will import from India.
- It is a move to reduce the $60 billion trade deficit that China has with India. India's exports to China in 2017-18 amounted to $33 billion while imports from China stood at $76.2 billion.
- India is the world's largest sugar producer with a production of 32 million tonnes in 2018. However, domestic consumption is only around 25 million tonnes.

SCIENCE AND TECHNOLOGY

The legacy of NASA's Kepler

IN NEWS:

- NASA's Kepler space telescope, which retired after running out of fuel, is being widely described as the most prolific planet-hunting machine in history.
- By June 2017, it had discovered more than 4,000 planet candidates and 2,300 confirmed planets.

IN DEPTH:

KEPLER'S SPACE TELESCOPE:

- **Kepler** is a retired space observatory launched by NASA to discover Earth-size planets orbiting other stars. Named after astronomer Johannes Kepler.
- The spacecraft was launched on March 7, 2009 into an Earth-trailing heliocentric orbit.
- Designed to survey a portion of our region of the Milky Way to discover Earth-size exoplanets in or near habitable zones and estimate how many of the billions of stars in the Milky Way have such planets
- Kepler's sole scientific instrument is a photometer that continually monitors the brightness of approx 150,000 main sequence stars in a fixed field of view.
- These data are transmitted to Earth, then analyzed to detect periodic dimming caused by exoplanets that cross in front of their host star. Only planets whose orbits are seen edge-on from Earth can be detected. During its over nine years of service, Kepler observed 530,506 stars and detected 2,662 planets.

NASA's historic Dawn mission comes to an end

IN NEWS:

- Now **NASA's** pioneering **Dawn spacecraft** — which orbited the two largest objects in the asteroid belt — has run out of fuel, ending a 11-year mission that unravelled many mysteries of our solar system.
- The $467 million Dawn mission, launched in 2007 to study the **protoplanet Vesta** and the **dwarf planet Ceres**, missed scheduled communications sessions with NASA's Deep Space Network on October 31 and November 1.

IN DEPTH:

DAWN SPACECRAFT:

- **Dawn** was a space probe launched by NASA in September 2007 with the mission of studying two of the three known protoplanets of the asteroid belt, Vesta and Ceres.
- The astounding images and data collected from Vesta and Ceres are critical to understanding the history and evolution of our solar system.
- Dawn is the first spacecraft to orbit two extraterrestrial bodies, the first spacecraft to visit either Vesta or Ceres, and the first to visit a dwarf planet, arriving at Ceres in March 2015, a few months before New Horizons flew by Pluto in July 2015.

ISRO's GSAT-29

IN NEWS:

- ISRO is set to launch its communication satellite **GSAT-29** on its heavy-lift vehicle, the **GSLV-MkIII** (on November 14).
- ISRO is also preparing for a **PSLV mission** on November 26 to launch **HySIS, a new variant of Earth observation satellites**, along with 20-30 small commercial satellites.
- Lunar lander-rover Chandrayaan-2 is slated for launch in January next year.

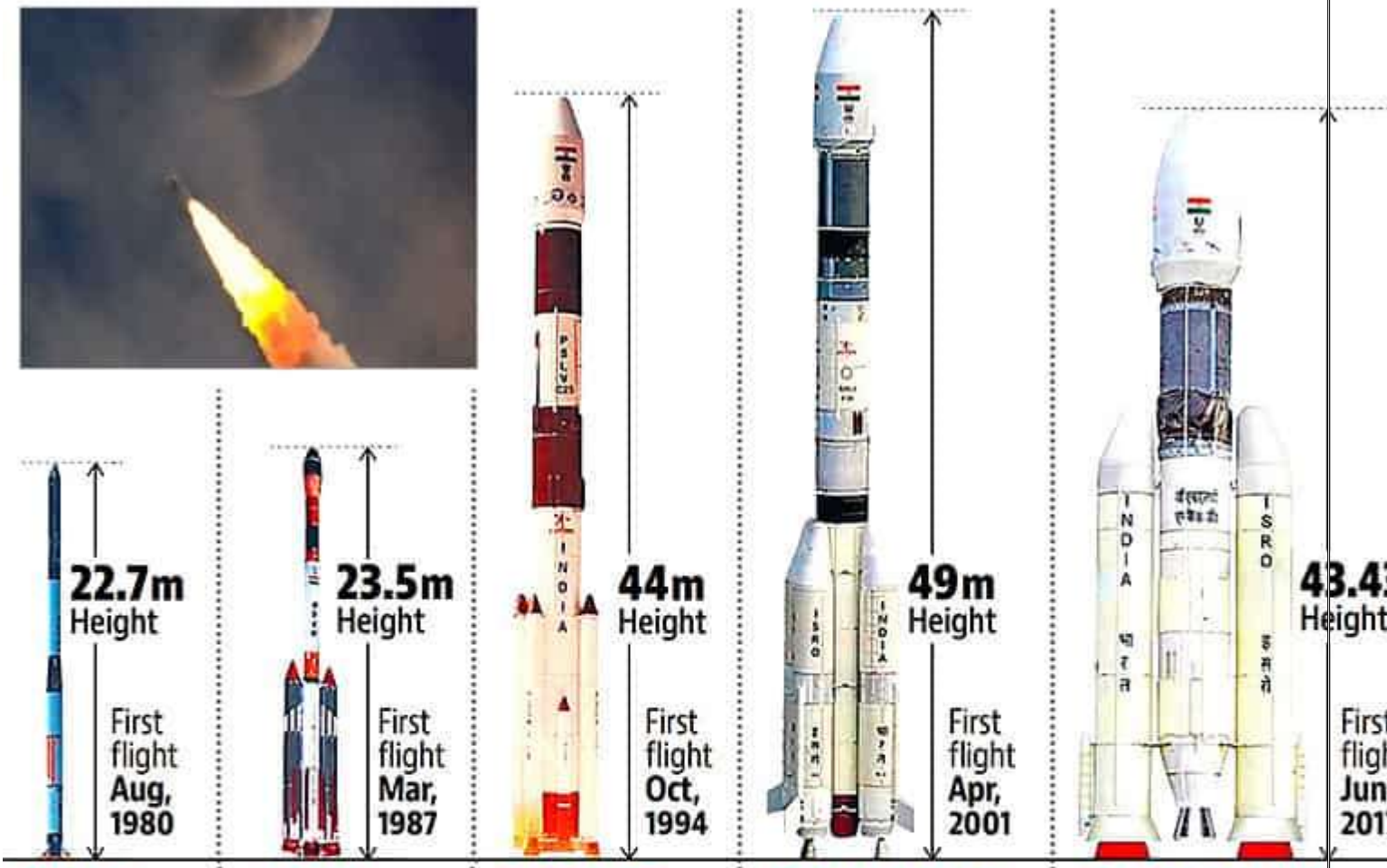
GSAT-29 and GSLV-MkIII-D2 rocket

IN NEWS:

- ISRO successfully placed another communication satellite (GSAT-29) in a geostationary transfer orbit.
- ISRO also achieved a crucial success of GSLV-MkIII rocket which is slated to launch two big missions – Chandrayaan-2 and the human space mission — in the next four years.
- The satellite is equipped with powerful transponders intended to meet the communication requirements of users in remote areas in the Northeast and Jammu and Kashmir.

IN DEPTH:

- GSLV-MkIII rocket is India's most powerful rocket, and it lifted off with a 3,423 kg GSAT-29 satellite, heaviest satellite in Indian History that set in orbit.
- It is an important milestone for the Indian Space Programme towards achieving self-reliance in launching heavier satellites.



SLV-3	ASLV	PSLV-XL	GSLV-Mk II	GSLV-Mk III
17t Lift-off weight	39t Lift-off weight	320t Lift-off weight	414t Lift-off weight	640t Lift-off weight
40kg Payload mass	150kg Payload mass	1,860kg Payload mass	2,200kg Payload mass	4,000kg Payload mass
Propulsion: All solid	**Propulsion:** All solid	**Propulsion:** Solid & liquid	**Propulsion:** Solid, liquid and cryogenic	**Propulsion:** Solid, liquid and cryogenic
Orbit: Low Earth Orbit (2,000km)	**Orbit:** Low Earth Orbit (2,000km)	**Orbit:** Sun Synchronous Polar Orbit (475km)	**Orbit:** Geosynchronous Transfer Orbit (35,786km)	**Orbit:** Geosynchronous Transfer Orbit (35,786km)

Geostationary Orbit (GEO)

If we need a satellite for the purpose which needs this satellites to remain at a particular distance from earth at all the time, then we need circular orbits so all the points on circular orbit are at equal distance from earth's surface. The circular equatorial orbit is exactly in the plane of equator on the earth. If the satellite is moving in the circular-equatorial orbit and its angular velocity is equal to earth's angular velocity, the satellite is said to be moving along with the earth. This satellite would appear stationary from the earth and this orbit would be called Geostationary Orbit.

Features of geostationary satellite

- The orbit is circular The orbit is in equatorial plane i.e. directly above the equator and thus inclination is zero.
- The angular velocity of the satellite is equal to angular velocity of earth Period of revolution is equal to period of rotation of earth.
- Finish one revolution around the earth in exactly one day i.e. 23 hours, 56 Minutes and 4.1 seconds
- There is ONLY one geostationary orbit.

Geosynchronous Orbit

There is a difference between the geostationary and geosynchronous orbits. We should note that while other orbits may be many, there is ONLY ONE Equatorial orbit, i.e. the orbit which is directly above the earth's equator. Sometimes we send a satellite in the space which though has a period of revolution is equal to period of rotation of earth, but its orbit is neither equatorial nor Circular. So, this satellite will finish one revolution around the earth in exactly one day i.e. 23 hours, 56 Minutes and 4.1 seconds, yet it does NOT appear stationary from the earth. It looks oscillating but NOT stationary and that is why it is called Geosynchronous.

Features of a geosynchronous satellite

- The orbit is NOT circular
- The orbit is NOT in equatorial plane i.e. directly above the equator, it's in inclined orbit The angular velocity of the satellite is equal to angular velocity of earth Period of revolution is equal to period of rotation of earth.
- Finish one revolution around the earth in exactly one day i.e. 23 hours, 56 Minutes and 4.1 seconds
- There are many geosynchronous orbits.

SpiNNaker: world's largest brain-mimicking supercomputer

IN NEWS:

- SpiNNaker – the world's largest supercomputer designed to work in the same way as the human brain has been switched on for the first time.

IN DEPTH:

ABOUT SpiNNaker:

- The Spiking Neural Network Architecture machine is capable of completing more than 200 million million actions per second, with each of its chips having 100 million transistors.
- SpiNNaker, built at the University of Manchester in U.K., can model more biological neurons in real time than any other machine on the planet.
- Biological neurons are basic brain cells present in the nervous system that communicate by emitting 'spikes' of pure electro-chemical energy.

ABOUT SUPER COMPUTERS IN INDIA:

- It started in late 1980s because Cray supercomputers were denied for import due to an arms embargo imposed on India, as it was a dual-use technology and could be used for developing nuclear weapons.
- Supercomputer PARAM 8000 (made by the Centre for Development of Advanced Computing (C-DAC)) was launched on July 1, 1991 is considered India's first supercomputer. It was indigenously built in 1991 by C-DAC and was replicated and installed at ICAD Moscow in 1991 under Russian collaboration.

ENVIRONMENT

Delhi air worsens a day after Diwali

IN NEWS:

- Supreme Court restrictions on crackers were violated.

IN DEPTH:

SC JUDGEMENT{BEFORE DIWALI}

- We had earlier read about Supreme Court's order that **permitted the sale of only 'green crackers'**, which reduce particulate matter emissions by 35% at least, and specified that even these only **be used between 8 p.m. and 10 p.m.** on Diwali. (especially in Delhi and NCR region)
- However, many regions of Delhi's National Capital Region reported instances of crackers being burnt beyond this interval. Moreover, because such green crackers weren't commercially available, the crackers that were burnt were likely illegal.

CONCERNS:

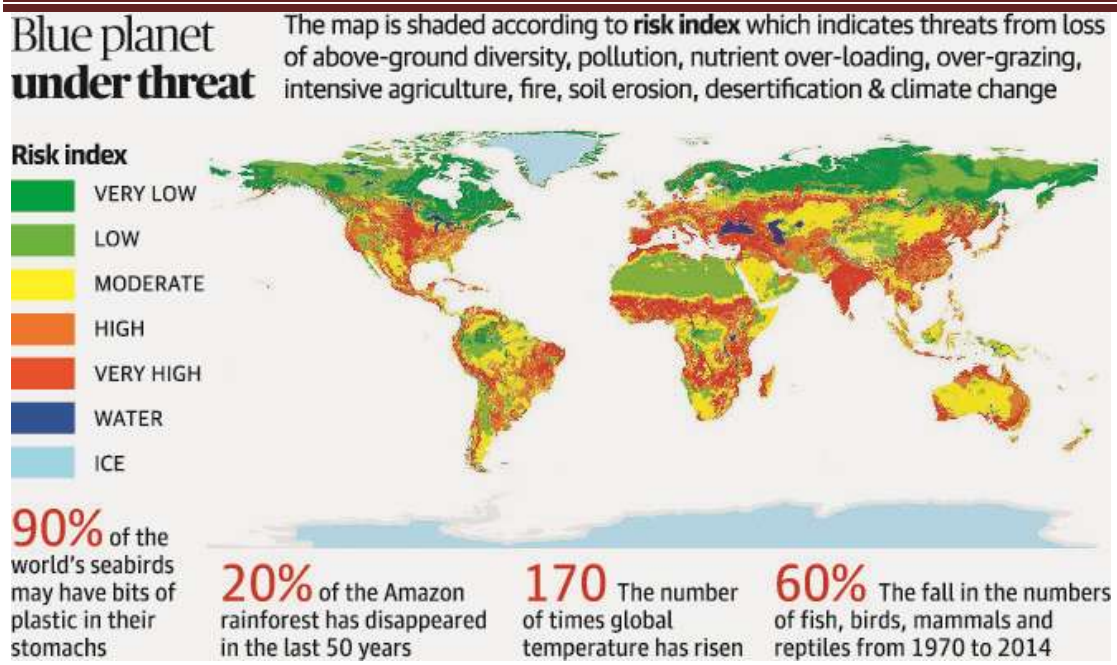
- Delhi's Air Quality Index (AQI) in the 'severe' category.
- Some of Delhi's pollution monitoring stations recorded particulate matter (PM) levels that exceeded 999 microgram per cubic metre.
- This corresponds to air quality that's harmful to even healthy people and severely afflicts those with underlying respiratory illnesses.

WWF report on India's declining soil biodiversity and pollinators population

IN NEWS:

According to the **Global Soil Biodiversity Atlas** prepared by the **European Commission Joint Research Centre** –

- India among nations whose soil biodiversity faces the highest level of risk.
- India, Pakistan, China, several countries in Africa and Europe, and most of North America – have been coloured red on the Atlas



IN DEPTH:

- Soil biodiversity encompasses the presence of micro-organisms, micro-fauna (nematodes and tardigrades for example), and macro-fauna (ants, termites and earthworms).
- The 'risk index' for the globe — indicates threats from loss of above-ground diversity, pollution and nutrient over-loading, over-grazing, intensive agriculture, fire, soil erosion, desertification and climate change.

LIVING PLANET INDEX 2018

prepared by the **World Wide Fund for Nature** –

- Human activities pushing the planet to the brink.
- There has been a 60% decline in the size of populations of mammals, birds, fish, reptiles, and amphibians in just over 40 years.
- There has been drastic decline in populations of pollinators. (For instance, while 150 million bee colonies were needed to meet the pollination requirements of about 50 million hectares of agricultural land in India, only 1.2 million colonies were present.)
- The above two recent studies have focused on the dramatic reductions in bee and other pollinator numbers and on the risks to soil biodiversity, critical to sustain food production and other ecosystem services.
- The two key drivers of biodiversity loss were the over exploitation of natural resources and agriculture.
- While India's per capita ecological footprint was less than 1.75 hectares/person (the lowest band among countries surveyed), its high population made it vulnerable to an ecological crisis, even if per-capita consumption remained at current levels, the WWF warned.

World Wildlife Fund "Living Planet" report 2018

IN NEWS:

The WWF Living Planet Index tracks more than 4,000 species spread across nearly 17,000 populations.

IN DEPTH:

KEY FINDINGS:

Crashing populations

- From 1970 to 2014, the number of animals with a backbone — birds, reptiles, amphibians, mammals and fish — plummeted across the globe, on average, by about 60%.
- For freshwater vertebrates, losses topped 80%. Geographically, South and Central America have been hit hardest, with 89% less wildlife in 2014 than in 1970.

Disappearing species

- The index of extinction risk for five major groups — birds, mammals, amphibians, corals and an ancient family of plants called cycads — shows an accelerating slide towards oblivion.
- Depending on which categories are included, the current rate at which species are going extinct is 100 to 1,000 times greater than only a few centuries ago, when human activity began to alter the planet's biology and chemistry in earnest.
- By definition, this means that Earth has entered a mass extinction event, only the sixth in half-a-billion years.

Breaching boundaries

- In 2009, scientists weighed the impact of humanity's expanding appetites on nine processes — known as Earth systems — within nature. Each has a critical threshold, the upper limit of a "safe operating space" for our species.
- The do-not-cross red line for climate change, for example, is global warming of 1.5°C, according to a new U.N. report.
- So far, we have clearly breached two of these so-called planetary boundaries: species loss, and imbalances in Earth's natural cycles of nitrogen and phosphorous (mainly due to fertiliser use).
- For two others, climate and land degradation, we have one foot in the red zone. Ocean acidification and freshwater supply are not far behind. As for new chemical pollutants such as endocrine disruptors, heavy metals, and plastics, we simply don't know yet how much is too much.
- More generally, the marginal capacity of Earth's ecosystems to renew themselves has been far outstripped by humanity's ecological footprint, which has nearly tripled in 50 years.

Shrinking forests

- Nearly 20% of the Amazon rainforest, the world's largest, has disappeared in five decades. Tropical deforestation continues unabated, mainly to make way for soy beans, palm oil and cattle.
- Globally, between 2000 and 2014, the world lost 920,000 sq. km of intact or "minimally disturbed" forest, an area roughly the size of Pakistan or France and Germany combined. Satellite data shows the pace of that degradation picked up by 20% from 2014 to 2016, compared with the previous 15 years.

Depleting oceans

- Since 1950, our species has extracted 6 billion tonnes of fish, crustaceans, clams, squids and other edible sea creatures. Despite the deployment of increasingly sophisticated fishing technologies, global catches — 80% by industrial fleets — peaked in 1996 and have been declining since.
- Climate change and pollution have killed off half of the world's shallow water coral reefs, which support more than a quarter of marine life. Even if humanity manages to cap global warming at 1.5°C — which many scientists doubt is possible — coral mortality will likely be 70 to 90%.
- Coastal mangrove forests, which protect against storm surges made worse by rising seas, have also declined by up to half over the last 50 years.

461 elephants electrocuted in country in 8 years since 2009

IN NEWS:

- More than a dozen elephants were electrocuted between August to October 2018.
- Human-elephant conflict remains a major concern for policy makers and conservationists.
- Electrocution of elephants is turning out to be a critical area in the management of India's elephant population.

IN DEPTH:

- Every year, about 50 elephants have died on average due to electrocution.
- A total of 461 elephant deaths due to electrocution occurred in the eight years between 2009 and November 2017.
- The States with the highest elephant population are Karnataka (6,049), followed by Assam (5,719) and Kerala (3,054).

Concerns:

- Karnataka, which has the highest population of elephants, has recorded the highest casualties by electrocution, numbering 106.
- In Odisha, 90 elephants died of electrocution.
- 70 elephants died of electrocution in Assam; 48 elephants in West Bengal; and 23 elephants in Chhattisgarh.

Solution:

- Need for greater surveillance and protection of elephant corridors.
- Need for greater coordination between the Forest Department and different agencies, including the Power Department, as well as continuous monitoring of electrical wires passing through areas of elephant movement.
- Stop illegal electrical fencing, and having proper guidelines for maintaining the height of high tension electrical wires.
- Come up with a proper zone-wise management plan for different elephant landscapes — where to allow elephants and where to restrict their movement.

Greater flamingoes at Hope Island after 25 years

IN NEWS:

- Flock of five greater flamingoes has been spotted along the coast of Hope Island, a part of the **Coringa Wildlife Sanctuary in Andhra Pradesh**.

IN DEPTH:

GREATER FLAMINGOES:

- The **greater flamingo** (*Phoenicopterus roseus*) is the most widespread and largest species of the flamingo family.
- It is found in Africa, on the Indian subcontinent, in the Middle East, and in southern Europe. The primary threats to flamingo populations are bacteria, toxins, and pollution in water supplies, which is usually run-off from manufacturing companies, and encroachment on their habitat.
- Greater flamingoes are filter feeders and get their characteristic pink colour from their diet of brine shrimps and algae available in coastal wetlands.
- Flamingoes being spotted along the coast can be considered as indicator of a healthy coastal environment.

CORINGA WILDLIFE SANCTUARY:

- The Coringa Wildlife Sanctuary (CWS) is a wildlife sanctuary and estuary situated in Andhra Pradesh. It covers an area of 235.7 square kilometers.
- It is the second largest stretch of mangrove forests in India with 24 mangrove tree species and more than 120 bird species.
- It is home to the critically endangered white-backed vulture and the long billed vulture.

490 Indian star tortoises seized

IN NEWS:

- Customs officials seized 490 Indian star tortoises when they were about to be smuggled out of Chennai harbor.
- Wildlife Protection Act, 1972 and Convention on International Trade in Endangered Species (CITES) prohibits the exports and imports of star tortoises.

IN DEPTH:

INDIAN STAR TORTOISE:

- The Indian star tortoise (*Geochelone elegans*) is a threatened species of tortoise found in dry areas and scrub forest in India and Sri Lanka.
- They range from India (except Lower Bengal), extending west to Sindh province (Pakistan) and Sri Lanka.
- A large number of specimens of this species are found in the illegal wildlife trade in India.
- In countries like Malaysia, Thailand and Singapore, there is a huge demand for star tortoises. They are traded usually for use in traditional medicines, for food and also to be kept as exotic pets.

Sangai deer

IN NEWS:

- The sangai is an endemic and endangered subspecies of brow-antlered deer found only in Manipur, India. It is also the state animal of Manipur and is under threat from poachers.
- There are less than 260 deer in its natural habitat, the 40 sq. km. Keibul Lamjao national park.

IN DEPTH:

About Sangai

- The sangai is an endemic and endangered subspecies of brow-antlered deer found only in Manipur, India. It is also the state animal of Manipur. Its common English name is Manipur brow-antlered deer or Eld's deer and the scientific name is , Rucervus eldii eldii.
- The brow-antlered deer or the dancing deer is found in its natural habitat only at Keibul Lamjao National Park over the floating biomass locally called "phumdi" in the south eastern part of Loktak Lake.
- Phumdi is the most important and unique part of the habitat. It is the floating mass of entangled vegetation formed by the accumulation of organic debris and biomass with soil. Its thickness varies from few centimeter to two meters. The humus of phumdi is black in colour and very spongy with large number of pores. It floats with 4/5 part under water.
- IUCN status: Endangered

Wildlife and Bird Sanctuary : Point Calimere

IN NEWS:

- Point Calimere Wildlife and Bird Sanctuary is a protected area in Tamil Nadu.
- The sanctuary was created in 1967 for conservation of the near threatened blackbuck antelope, an endemic mammal species of India. It is famous for large congregations of waterbirds, especially greater flamingos.

IN DEPTH:

- This sanctuary is an area of high biodiversity, with many unique species of animals and birds.
- The flagship species of the sanctuary is the near threatened blackbuck antelope, one of the four antelope species in India (Chinkara, Chausingha and Nilgai being the other three) and the most numerous large animal in the sanctuary.
- This site has recorded the second largest congregation of migratory waterbirds in India, with a peak population in excess of 100,000, representing 103 species.

Concerns:

- Major threats to the natural biodiversity and ecological balance of the sanctuary are: loss of habitat for waterbirds, soil and water salinisation by adjacent salt pans, spread of the invasive Prosopis juliflora, cattle grazing and scarcity of fresh water.
- The pH and salinity of the waters exceeded permissible limits for ecologically sensitive zones.
- The wildlife sanctuary comprises sandy coastal, saline swamps and thorn scrub forests around the backwater. Though it is a protected area and a Ramsar site, chemical companies and small-scale shrimp farms around the wetland have started to pose a threat to the biodiversity and ecosystem of the sanctuary.

DEFENCE

India declares nuclear triad operational

IN NEWS:

- India declared that its **nuclear triad**, stated in its nuclear doctrine, is operational.
- A nuclear triad is a three-pronged military force structure that consists of land-launched nuclear missiles, nuclear-missile-armed submarines and strategic aircraft with nuclear bombs and missiles.
- India's And-triad became operational with its indigenous ballistic missile nuclear submarine **INS Arihant** conducted its first deterrence patrol.

IN DEPTH:

PURPOSE OF NUCLEAR TRIAD:

- The purpose of having this three-branched nuclear capability is to significantly reduce the possibility that an enemy could destroy all of a nation's nuclear forces in a first-strike attack.
- This, in turn, ensures a credible threat of a second strike, and thus increases a nation's nuclear deterrence.

INDIA'S NUCLEAR WEAPON POLICY:

- India's nuclear weapons policy is that of "no first use" and "minimum credible deterrence," which means that the country will not use nuclear weapons unless they are attacked first, but the country does have the capability to induce the second strike.
- India completed its nuclear triad with the commissioning of INS Arihant in August 2016, which was India's first submarine built ingenuously.

Indian Army inducts its artillery gun systems

IN NEWS:

Indian Army inducts its first artillery gun systems in three decades.

- M777 Ultra Light Howitzers : : from the U.S.
- K9 Vajra-T self-propelled artillery gun : : from South Korea

IN DEPTH:

ARTILLERY GUN SYSTEM:

- Artillery is a class of heavy military weapons built to fire munitions far beyond the range and power of infantry's small arms.
- Early artillery development focused on the ability to breach fortifications, and led to heavy, fairly immobile siege engines
- The **Army's Field Artillery Rationalisation Plan**, 1999, envisages induction of 3,000 guns of various types for 220 artillery regiments

DEALS SO FAR:

- The Army last inducted an artillery gun system — the Bofors guns procured from Sweden — in the early 1980s. Attempts to buy new guns did not make progress.
- India signed a $737-million deal with the U.S. in November 2016 under the Foreign Military Sales Programme for 145 M777 Ultra Light Howitzers. (The first 25 guns will be imported and the rest will be assembled in India in partnership with Mahindra Group.)
- The M777 is a 155-mm, 39-calibre towed artillery gun. It weighs just four tonnes, making it transportable underslung from helicopters.
- The K9 Vajra-T is a 155-mm, 52-calibre self-propelled gun with a maximum range of 40 km. (The first 10 guns will be imported from South Korea and the rest will be made by L&T in India.)

Growing arsenal

Artillery gun systems – including the M777 A2 ultra light howitzers, K-9 Vajra self-propelled gun – and a composite towing vehicle were inducted into the Army on Friday. A lowdown on their technical specifications and procurement process:

M777 ULTRA LIGHT HOWITZER

- It is a 155-mm, 39-calibre towed artillery gun made of titanium and aluminium alloys
- It has a range of 24 to 30 km, depending on the type of ammunition used
- The gun weighs four tonnes and can be transported by helicopters
- In November 2016, India signed a $737 million deal with the U.S. for 145 howitzers under the Foreign Military Sales Programme
- Of the 145, 20 will be imported, and the rest will be assembled back home in phases
- The Army has not inducted any artillery gun since the 1980s

The M777 ultra light howitzer being fired on Friday at the Deolali artillery centre. ■ AJAJ SHAIKH

K9 VAJRA-T GUN

- It is a 155-mm, 52-calibre self-propelled artillery gun with a maximum range of 40 km
- The fire control system has been customised for desert conditions
- In April 2017, Larsen & Toubro (L&T) and Hanwha Techwin of South Korea signed a contract to make the guns
- The gun was short-listed by the Army after extensive trials. The deal was worth about ₹4,500 crore for 100 guns
- The first 10 guns have been imported from South Korea in a semi-knocked-down state and assembled by L&T in India
- The remaining guns will largely be made in India with some major assemblies coming from South Korea
- The first regiment would be in place by July 2019, and all 100 guns will be delivered by November 2020

ARTILLERY TRACTOR

The 6x6 field artillery tractor was developed by Ashok Leyland and will replace the ageing fleet of Tatra artillery gun-towing vehicles

K-9 Vajra showcases its potential. ■ PTI

■ AJAJ SHAIKH

These guns are being inducted almost 30 years after the Bofors guns were inducted... Their induction will give a huge fillip to the fire-power capability of Indian Army on our western borders

– NIRMALA SITHARAMAN, DEFENCE MINISTER

Defence Procurement Procedure (DPP)

IN DEPTH:

- The Defence Procurement Procedure (DPP) 2013 mandates that acquisitions worth over □ 1,000 crore should be first cleared by the Cabinet Committee on Security (CCS).
- The DPP structure was introduced after the Kargil War.

Role of CCS

- Major decisions with respect to the significant appointments, issues of national security, defence policy and expenditure of India are taken by the Cabinet Committee on Security (CCS) in India.
- The Prime Minister chairs the CCS. The committee comprises the Minister of External Affairs, the Home Minister, Finance Minister and the Defence Minister.

Defence Acquisition Council (DAC)

- DAC – is the government's highest decision-making body on procurement.
- DAC is chaired by Union Defence Minister.
- To counter corruption and speed up decision-making in military procurements.

The decision flowing from the Defence Acquisition Council are to be implemented by the following 3 Boards –

1. Defence Procurement Board headed by the Defence Secretary
2. Defence Production Board headed by the Secretary (Defence Production)
3. Defence Research & Development Board headed by the Secretary (Defence Research & Development)