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## 7 PM COMPILATION

**1ˢᵗ- 15ᵗʰ December, 2020**

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**Features of 7 PM compilation**

- ❖ **Comprehensive coverage of a given current topic**
- ❖ **Provide you all the information you need to frame a good answer**
- ❖ **Critical analysis, comparative analysis, legal/constitutional provisions, current issues and challenges and best practices around the world**
- ❖ **Written in lucid language and point format**
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**How Tropical Cyclones are formed?**
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## How Tropical Cyclones are formed?

**News:** Cyclone Burevi has weakened into a deep depression as its interaction with a landmass in Tamil Nadu has slowed its movement and intensity.

Cyclonic disturbances are rapid weather systems, which include weather depressions, deep depressions, and tropical cyclones (of severe, very severe, extremely severe, and super cyclonic storms depending on their intensity).

### What are Tropical Cyclones?

Tropical cyclones are violent storms that originate over oceans in tropical areas and move over to the coastal areas bringing about large-scale destruction caused by violent winds, very heavy rainfall, and storm surges.

Cyclones create a whirl in the atmosphere with very strong winds circulating around it in an anti-clockwise direction in the Northern Hemisphere and in a clockwise direction in the Southern Hemisphere.

The pressure gradient falls towards the center from all directions and therefore winds try to converge towards the center from all directions. The air blows inwards in **an anticlockwise direction in the northern hemisphere** and **clockwise in the southern hemisphere**.

### Conditions for formation of Cyclones

**The conditions favorable for the formation and intensification of tropical storms are:**

1. **A consistent source of heat** as tropical cyclones are thermally induced low-pressure systems.
2. **Large sea surface** with a temperature higher than 27° C which is possible only during the late summers i.e. September, October, and November
3. Presence of the **Coriolis force**.
4. Small variations in the **vertical wind speed**.
5. A pre-existing weak low-pressure area or low-level-cyclonic circulation;
6. Upper divergence above the sea level system.

### Structure of Tropical Cyclone

The structure of a Tropical Cyclone is typically a massive cumulonimbus cloud with rapidly rising air spiraling upwards at the margins of the eye. An eye is a region of calm with subsiding air. Around the eye is the Eyewall, where strong spiraling winds ascends and the height can reach up to the tropopause.

Tropical cyclones are formed by the following parts:

**Eye:**

The eye is the center of cyclones which is characterized by a calm area, sinking, and light wind. The eye is the calmest part of the Cyclone structure.

Conservation of angular momentum and centrifugal force are the reasons behind its formation.

**Eyewall:**

A band around the eye of the greatest wind speed, where clouds reach the highest and precipitation is the heaviest. The heaviest wind damage occurs where a hurricane's eyewall passes over land.

**Rain bands:**

Curved bands of clouds and thunderstorms that trail away from the eyewall in a spiral fashion. These bands are capable of producing heavy bursts of rain and wind. Sometimes

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gaps are found between spiral rain bands, where no impact (wind or rain) of cyclones are found.

**Formation of Tropical Cyclones**
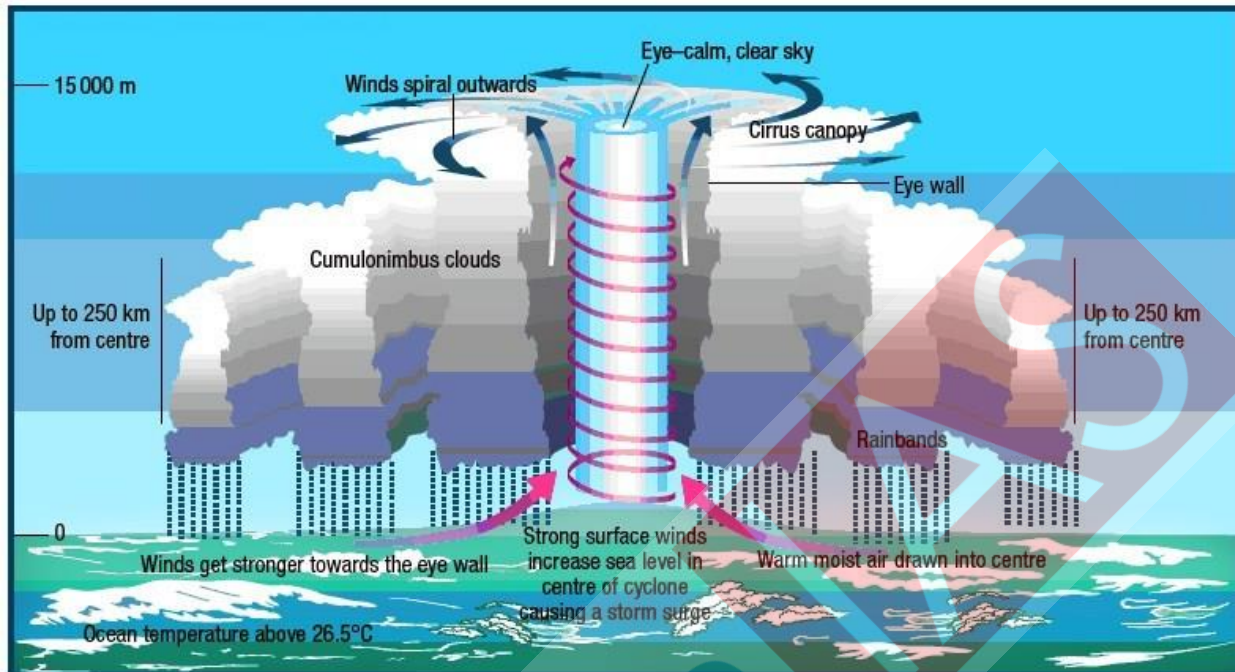


- As mentioned in the conditions, **air temperature higher than 27° C with an abundant and turbulent transfer of water vapor to the overlying atmosphere (air) by evaporation** is required for the formation of Cyclones, which is facilitated by direct insolation.
- As the low-pressure area is created over sea pockets and high pressure on the surrounding areas, air starts to flow from the high-pressure area to low-pressure pockets.
- The Coriolis force causes the wind to spiral around a low-pressure area. As the presence of Coriolis force is negligible in the equatorial belt between 5 degrees north and 5 degrees south latitudes, hence cyclonic systems do not develop in this region.
- Heated sea surface starts to heat the air over that leading to air moving up and away from the ocean surface **due to convection**, it leaves less air near the surface. Cool Air from the surrounding areas rushes towards the empty area to fill it, which after reaching there gets heated and picks moisture and starts rising upwards. It creates the cycle of air moving in and up.
- As the moist air rises up, it starts cooling with the altitude (temperature falls with the height), and the process of condensation starts. It results in the release of the **latent heat of condensation. The latent heat of condensation is what drives the storm and leads to the formation of clouds.**
- The energy that intensifies the storm, comes from the **condensation process** in the towering cumulonimbus clouds, surrounding the center of the storm (Eye).
- With the increasing altitude, the air cools down to an extent at tropopause where it fails to rise any further and starts to diverge outside horizontally.
- The whole system of clouds and wind spins and grows, fed by the ocean's heat and water evaporating from the ocean surface. As the storm system rotates faster and faster, an eye forms in the center.
- A mature tropical cyclone is characterized by the strong spirally circulating wind around the center, called the eye. The diameter of the circulating system can vary between 150 and 250 km.

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- Rain bands regions with cumulonimbus clouds are created, facilitating intense rainfall in that region. Cloud formation is dense at the center and density decrease towards the outside.

**Conditions that slow or end Cyclones**

- With a **continuous supply of moisture from the sea,** the storm is further strengthened. On reaching the land the moisture supply is cut off and the storm dissipates. The place where a tropical cyclone crosses the coast is called the landfall of the cyclone.
- Another condition that slowdown or ends a Cyclone is when dry, cool air is suddenly present in the system, which reduces the possibility of convection to keep the storm going.

**Why More Cyclones are formed in Bay of Bengal?**

There are other coastlines around the world that are vulnerable to surging storms – the Gulf Coast of Louisiana, for example – but the "north coast of the Bay of Bengal is more prone to catastrophic surges than anywhere on Earth".

Both the Bay of Bengal and the Arabian Sea are prone to Cyclonic storms, but Cyclonic activities are more intense and frequent in Bay of Bengal Compared to the Arabian Sea

- High sea surface temperatures along with high humidity due to higher rainfall in the Bay of Bengal, triggers extremely strong cyclones.
- Sluggish winds, along with warm air currents in the Bay of Bengal keep temperatures relatively high.
- The supply of constant inflow of fresh water from the Ganga and Brahmaputra rivers makes it impossible for the warm water to mix with the cooler water below.
- Cyclonic winds easily move into the Bay of Bengal due to the presence of moisture source from rivers and the absence of any large landmass unlike the Arabian Sea, where Cyclones usually weaken due to the presence of Western Ghats.
- Whereas Arabian Sea receives stronger winds that help dissipate the heat, and the lack of constant fresh water supply helps the warm water mix with the cool water, reducing the temperature.

**Classification of storms**

Indian Meteorological Department (IMD), which classifies the low pressure systems in the Bay of Bengal and the Arabian Sea on the basis of capacity to damage, which is adopted by the WMO.

| Type of Disturbances | Wind Speed in Km/h | Wind Speed in Knots |
|---|---|---|
| Low Pressure | Less than 31 | Less than 17 |
| Depression | 31-49 | 17-27 |
| Deep Depression | 49-61 | 27-33 |
| Cyclonic Storm | 61-88 | 33-47 |
| Severe Cyclonic Storm | 88-117 | 47-63 |
| Super Cyclone | More than 221 | More than 120 |

**Benefits of Tropical Cyclones:**

Although Tropical cyclones are known for the destruction they cause, when they strike, they also bestow certain benefits to the climatic conditions of that area such as

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- **Relieve drought conditions:** By bringing rain to the coastal areas, cyclones relieve the drought-like conditions in the surrounding areas.
- **Maintain equilibrium in the Earth's troposphere:** They Carry heat and energy away from the tropics towards temperate latitudes, thus helps in maintaining an equilibrium of the troposphere.
- Cyclones help in maintaining a relatively stable and warm temperature worldwide.

**Causes of destruction caused by Cyclones:**

There are three elements associated with cyclones that cause destruction during its occurrence. These are:

**Strong Gusts/Squall:**

- o These are very strong winds that accompany a cyclonic storm **damages installation, dwellings, communications systems, trees**, resulting in **loss of life and property**.
- o

- **Gusts:** These are short but rapid bursts in wind speed. These are the main cause of damage. Gusts are generally short-lived.
- **Squalls:** A squall is a strong rise in wind speed which generally lasts for some time. Squalls generally associated with the bands of thunderstorms.

**Torrential rains and inland flooding:**

- Torrential rainfall (more than 30 cm/hour) associated with cyclones is another major cause of damages.
    - o Unabated rain gives rise to **unprecedented floods**.
    - o Rain is a serious problem for the people which become shelterless due to cyclone.
    - o Heavy rainfall from a cyclone is usually spread over a wide area and causes large-scale **soil erosion and weakening of embankments**.

**Storm Surge:**

- It can be defined as an abnormal rise of sea level near the coast caused by a severe tropical cyclone;
    - o **Seawater inundates low-lying areas** of coastal regions drowning human beings and life stock, **causes eroding beaches and embankments**, **destroys vegetation,** and leads to a **reduction of soil fertility**.

Apart from these Cyclones also create destructions such as:

- o **Sudden Change in Regional climate:** The ability of cyclone to bring in warmer air is high. So, the elderly and children in those areas have a high vulnerability to develop heat-related problems such as heat strokes.
- o **Loss of Livelihood: The majority** of the coastal people generally depend on fishing which is completely halted by cyclones.
- o **Loss of economy:** The economic loss is in multifront from infrastructure loss, relief packages to people, etc.

**Government Initiatives:**

- Government is carrying out a **National Cyclone Risk Mitigation Project (NCRMP)** with the help of the **World Bank** to upgrade cyclone forecasting, tracking, and warning systems in India
- Government is also implementing the **Integrated Coastal Zone Management Project (ICZMP)** to improve national capacity for the implementation of comprehensive coastal management in India.

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- Government also **separated Structural(includes construction) and non-structural measures** for effective disaster management of cyclones
- **Solutions:**
- The government should consider the NDMA Guidelines for the management of cyclones:
- **Ensemble Warning System(EWS):** Establish EWS involving observations, predictions, warnings, and customized local level advice for decision-makers (national, state, district level) to manage the impact of the cyclone (Read more about EWS)
- **Commissioning of Aircraft Probing of Cyclone (APC)**: Guidelines calls for the combination of manned and Unmanned Aerial Vehicles (UAV) for critical observational data gaps.
- **Cyclone Disaster Management Information System (CDMIS)**: Establishing a comprehensive department for coverage of all management information and provide online services to the departments of Disaster management.
- **Specifying the roles and responsibilities** in institutionalizing Cyclone risk mitigation with Developmental planning.
- **Community-Based Disaster Management (CBDM)**: Guidelines asked to launch such activities in all villages of the 84 districts vulnerable to cyclones.

**Way forward:**

- With the adverse Climate Change risks posted by IPCC reports the only option for India is to better preparedness for the disaster with better urban planning, community awareness, etc.

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<div align="center">**Decriminalising Marijuana in India**</div>

*This article is based on the two Indian Express articles (links [Indian Express](#), [Indian Express](#)) published today and in October, 2020 respectively.*

**Why in News**

- **US President Biden** promises decriminalising the use of marijuana and also gave assurance to clearing out the past convictions related to it during his election campaign.
- In India also **Recent case of wide spread drug usage among Bollywood actors and actresses** created a wide debate on whether to legalise Marijuana or not?

**What is Cannabis?**

- According to the **World Health Organisation (WHO)**, **cannabis is a generic term** used to denote marijuana, hemp, weed etc and several other psychoactive preparations **of the plant Cannabis sativa and other plants in Cannabis super family**.
- In general Cannabis family has two major components
1. **CBD (cannabidiol):** It is a does not cause intoxication or psychoactive side effects and it is proven as **effective chronic pain relief drug**
2. **Delta-9 Tetra Hydro Cannabinol (THC)** is the major psychoactive constituent in cannabis

The **WHO says that cannabis is by far the most widely cultivated, trafficked and abused illicit drug in the world**.

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**What is Marijuana and the other terms associated with cannabis?**

**Marijuana:**

- Marijuana has high THC levels and intense psychoactive effects
- **Hydrophonic weed** refers to a soilless medium of cultivation of marijuana whereby instead of being grown in a field, it is grown at home without soil.

**Hemp/Weed:**

- It has lesser THC levels and has low psycho active effects compare to Marijuana.
- Generally, it is procured from the extract of the Marijuana leaves
- It has wide level of medicinal benefits and industrial uses.
- It is known as **Ganja in Hindi**.

**Bhang:**

- It is an edible preparation of cannabis, which is 'consumed either in the form of a drink or smoked'

**'Charas'** is the separated resin extracted from the cannabis plant.

The unpollinated female plants are called **hashish**. Cannabis oil (**hashish oil**) is a concentrate of cannabinoids

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**How the Cannabis/Marijuana is regulated in India?**

- Bhang, charas and ganja were regulated by the state excise departments and legally sold till 1985.
- In 1985 **The Narcotic Drugs and Psychoactive Substances (NDPS) Act** has been enacted central level **commercial cultivation of cannabis** by production, possession, sale/purchase, transportation, interstate import/export or any other forms is punishable**.** The Act has been amended three times – in 1988, 2001, and most recently in 2014.

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- While **CBD oil** manufacturing is **licenced under the Drugs and Cosmetics Act, 1940** can be legally used and sold. Some Indian websites do sell. But to purchase it one needs a prescription and many even facilitate it.
- Similarly, Bhang, ganja and charas are **enlisted in the Drugs and Cosmetics Rules**, 1945 **for use in Ayurveda, Siddha and Unani**

**Important Provisions of NDPS Act:**
- There are no restrictions on cultivation and procurement of cannabis for *medical and scientific purposes.*
- The legislature **left seeds and leaves of the cannabis plant out of the ambit of the NDPS Act.**
- The Act **establishes Narcotics Control Bureau** as the apex drug law enforcement agency and empowers them to oversee the implementation of of NDPS Act and also the other International conventions related to the it..
- *For holding a small quantity, the prescribed punishment is rigorous imprisonment for up to six months, fine of Rs. 10,000 or both.*
- *For holding more than a small quantity but less than the commercial quantity, the prescribed punishment is rigorous imprisonment for up to 10 years, fine of Rs. 1 lakh, or both.*
- *For holding commercial quantity, the prescribed punishment is rigorous imprisonment for up to 10-20 years, fine of Rs. 1-2 lakh, or both.*
- *The Act covers three broad classes of substances:*
3. *narcotic drugs, that is, those covered under the **1961 UN single Convention on Narcotic drugs**;*
    o Hashish, resin or charas, ganja, any mixture of charas or ganja is prohibited.
    o **Bhang or the cannabis leaf is excluded** from the act, but regulated through **state excise laws**.
    o leaf; derivatives include cocaine and any preparation containing 0.1% of cocaine
    o Opium: Poppy based products, preparations with 0.2% morphine
4. *psychotropic substances or those covered under the **1971 UN Convention on psychotropic substances** as well as other psychoactive substances such as **ketamine** which are not **yet classified under international conventions**; and*
5. *"Controlled substances" that are **used to manufacture narcotic drugs** or psychotropic substances, for example precursor chemicals such as acetic anhydride, ephedrine and pseudoephedrine.*
- *'Manufactured substances' category includes drugs such as Amphetamines, methamphetamines, LSD's*

**What are the significant aspects of the Act?**
- The Act prescribes **quantity-based punishment. The Act differentiates between small and commercial quantities of various drugs such as:**
    o Heroin: 5 grams-250 grams
    o Cocaine: 2 grams-100 grams
    o Hashish or Charas: 100 grams-1 kg
    o Opium: 25 grams-2.5 kg
    o Ganja: 1kg-20 kg
- The Act **Criminalize people who use drugs and provide treatment** for their relief from **National Fund for the Control of Drug Abuse.**

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**Why Marijuana should be legalised?**

- **Historic significance of Marijuana in India:**
    - In **later Vedic literature Atharva Veda** mentions **Bhang plant as one of the 5 sacred plants** and usage of Bhang since ancient times is common during the Hindu festivals of Holi and Mahashivaratri.
    - **Indian Hemp Drugs Commission in 1894** recommended against complete ban and found the usage as ancient and religious. ([For source](#))
    - In **1961, India opposed the inclusion of marijuana in the UN Convention on Narcotic Drugs**, citing its role in social and religious customs
- WHO study concluded Marijuana is **not as unhealthy compared to alcohol and tobacco products.**
    - It implies that the harms **associated** with marijuana use were **greatly overestimated** and society should **respond to its use through progressive public health policies** rather than ban.
- **Magnitude of substance use in India:** This is a **survey released by the Ministry of Social Justice and Empowerment** in 2019, it states that about 2.8 percent of Indians aged 10–75 years (3.1 crore people) were using cannabis in one form or other. ([for source](#))
- **Burden on Executive and Judiciary:**
    - **Narcotics Control Bureau** investigate, interrogate and arrest people with small or miniscule amounts of marijuana and produce them in front of judiciary. It requires **huge man power and state exchequer** to control small or miniscule amounts of drug usage.
    - It leads to wide scope of corruption at lower level of executive which harass people even for petty crimes.
    - By legalising it India **can release many young people landed in overcrowded jails** whose only crime was using marijuana for fun and **free up precious police time** and **go after the big drug mafias.**
- **International wave** of legalization of cannabis, based on its medicinal properties and commercial utilities Ex. **Uruguay** became the **first country to fully legalize marijuana i**n 2013. Then **Canada** followed the path.Now many states in USA legalised marijuana.

**Why Marijuana should stay Illegal? (Financial Express)**

- **Short- and long-term side effects of Marijuana**
    - Short term side effects may include a short-term memory loss, impaired motor skills, dry mouth and feelings of paranoia or anxiety.
    - **In long term** addiction, decreased mental ability and behavioural problems in children (when mothers used marijuana during pregnancy)
- **Marijuana is a gateway drug**
    - A private study found **more than 40% who used marijuana also used other 'Hard' drugs.**
- **Against the Directive Principles** of Article 47 which specifically calls for the prohibition of intoxicating drinks and drugs that are injurious to health
- **Against International Conventions** such as 1961 and 1971 UN conventions against Narcotic drugs and Psychotropic substances respectively and also International Opium Convention' (1925).
- **Difficulty in regulation:** The fallouts of pharmaceutical product divergence into cattle market and drugs without prescription can continue in Marijuana too and **put India's younger generation at risk**

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- **Not have completely proven medical records.** For Ex., there is no evidence that cannabis is beneficial when used in diseases such as Crohn's disease, sleep disorder, glaucoma, etc.

**Way forward:**

Instead of banning, India at present needs a progressive public health policy which control their use and reduce the harms by focusing on health education, age restrictions for buying, taxation policies, limiting the dose of the active ingredients and access to counselling for those who wish to stop is the need of the hour.

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### Honey adulteration and laws related to food adulteration in India

*This analysis is developed based on the article "Leading honey brands fail adulteration test by foreign lab, says CSE" of Business Standard*

**News:** In the most recent case of adulteration, Centre for Science and Environment (CSE), 77% of honey samples were found to be adulterated with sugar syrup.

**What are the Findings of CSE?**
- **Out of 13 big brands including Dabur, Patanjali, Baidyanath, Zandu, Hitkari, and Apis Himalaya etc., only 3 brands passed all the tests**.
- Some of India's famous honey brands, including Dabur, Patanjali, and Emami, although passed the tests in India, failed in adulteration tests carried out by German Laboratory.
- On the other hand, few smaller brands failed laboratory tests for both Indian and foreign standards.
- The level of adulteration in big brands is such that *tests carried out by an Indian laboratory were unable to detect the contamination* in top brands and could only be caught after the use of an advanced laboratory test called *nuclear magnetic resonance spectroscopy (NMR) in Germany*.
- Natural honey acquired from bees is mixed with sugar syrup acquired from rice, corn, beetroot, and sugarcane.
- Domestic manufacturers are *allegedly sourcing sugar syrup from China* for contamination of honey as the sugar syrup is available at half the price of raw honey.
- The decreasing cost has been indicated *by falling prices of raw honey at ~60-70 per kg now from ~150 per kg* six years ago, despite increasing demand for honey among the general public.
- In the most recent development, all of the big brands have refuted the reports and allegations of adulteration.

**What is food adulteration?**
- In India, where the population is huge and the mechanism of monitoring is lax, acts of food adulteration have become a common phenomenon.
- Adulteration is the act of degrading the nature or quality of food by incidental or intentional means through the addition or mixing of poor quality, inferior, harmful, substandard, useless, or unnecessary substances to food.
- Adulteration lowers the quality of food and sometimes, toxic chemicals are also added which can be hazardous to health.

Food Adulteration has been defined comprehensively under the *Prevention of Food Adulteration Act, 1954*. As per the act, food is adulterated if
- Any low-grade or inexpensive substance that has been replaced wholly or partly in the article making its nature, substance, or quality injurious;
- It contains any other substance which disturbs or is so processed as nature, substance or quality will have injurious effect;
- Any essential component of the article that has been wholly or partly distracted so as to affect injuriously nature, substance, or quality.

According to the Prevention of Food Adulteration Act, 1954 the food articles containing some ingredients in excess of the prescribed amount which is not hazardous for consumption *will not be considered adulterated*.

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### Most common *adulterants* in India

- Corn starch, sawdust, and flour are used as 'fillers' in spices.
- Khoya is adulterated with paper, refined oil, and skimmed milk powder
- Milk has been adulterated with diluted water, detergent, fat, and even urea.
- Tea leaves are usually adulterated with the same colored leaves, some of which might not even be edible and cause liver infection.
- Wheat is very commonly adulterated with ergot, a fungus containing poisonous substances, and is extremely injurious to health.
- Oxytocin saccharin, wax, calcium carbide, and copper sulphate are very common adulterants in fruits and vegetables.
- Arhar dal is most commonly adulterated with metanil yellow. Long-term consumption of metanil yellow on the developing and adult brain causes neurotoxicity.
- Consumption of adulterated food items leads to the accumulation of a toxic substance in the body, which may further lead to heart failure, liver and kidney disorders.

### Laws against food adulteration in India
### Food Safety and Standards Act, 2006 (FSS Act, 2006)

- In 2006, the government enacted the FSS Act, which repealed all other laws governing food quality in India at that time. The act empowered the central government to frame rules under the act to deal with several aspects with respect to the regulation of food safety.
- **FSSAI:** Act established the **Food Safety and Standard Authority of India** (FSSAI) to supervises and regulate food safety and standards. FSSAI is empowered to establish various other authorities like the Central Advisory Committee, Scientific Panels, and committees for consultation and opinions in the matters of food safety.
- **Food Commissioners:** The Act empowers the State Government to appoint a Commissioner of Food Safety for the State for effective implementation of the provisions at the State level.
- **Food Safety officers:** Food Commissioner is authorised to appoint Food Safety officers for each district.
  - A food safety officer is the authorized person to inspect the safety and security of food that is being served in restaurants or street food stalls.
  - In case the food inspected by an officer is not fresh or had got spoilt, the FSSAI officer has all the rights to stop the production of such food and issue a warning in writing to the organizer.
- **Licensing:** Act prohibits any person to operate any food business without a license from the designated officers.
- It provides for the punishment for the Import, manufacture, storage, sale or distribution of any food article which is adulterated and compensation to the victims.
- The Act also regulates the food products which can be imported.

### Rules framed under the act
Following are some of the rules enacted by the government:

- Food Safety and Standards (Licensing and Registration of Food Businesses) Regulation, 2011.
- Food Safety and Standards (Packaging and Labelling) Regulation, 2011.
- Food Safety and Standards (Laboratory and Sampling Analysis) Regulation, 2011.

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- Food Safety and Standards (Food Product Standards and Food Additives) Regulation, 2011.

## Indian Penal Code, 1860

According to Section 272 and 273, food or drink adulteration or sale of such food or drink is an offense punishable with imprisonment which may extend to six months or fine or both.

## DART

FSSAI has set up an online platform named DART (Detect Adulteration with Rapid Test) for checking the quality of various food articles like milk, dairy products, oils, grains, fruits, vegetables, sugar, beverages, etc.

## Consumer Protection Act, 2019

The Act provides for punishment by a competent court for the manufacture or sale of adulterant/spurious goods. The court may, in case of the first conviction, suspend any license issued to the person for a period of up to two years, and in case of second or subsequent conviction, cancel the license permanently.

**Causes of adulteration**

**Profit motive:** Big and small business owners are adulterating the products to maximize their profits by reducing the cost of producing them. For ex; in the case of honey, producers have been allegedly using sugar syrup which is less costly compared to raw honey.

**Lack of technology:** India is lacking the technology to detect the adulteration of high levels, such as in the present case of adulteration in Honey, Indian tests could not be able to detect the adulteration in the samples provided by the big brands.

**Lesser Punishment:** Punishment for adulteration, which may cause grievous injury to the human system and cause the disease like cancer, is not stringent.

**Increasing food demand:** With the growth of the population together with their purchasing power, demand for food products is also increasing at a fast pace. To meet this increasing demand, adulteration becomes a common phenomenon.

**Lack of manpower:** FSSAI has cited a shortage of food safety officers and laboratories as reasons for increasing the production of unsafe food products.

**Way forward**

**Public awareness**

- The most important component for ensuring food safety is the people themselves. If people are aware of the on the spot quality assessment techniques of the products they might be able to avoid low-quality or harmful products.
- Thus, awareness must be spread on a wider scale among people for ensuring food safety through various social media platforms.
- One of the most potential post-purchase ways to check adulteration is by performing simple tests at homes. Consumers should also be aware of their rights and report the seller who has sold them adulterated food.
- People need to be very cautious when they buy products from stores and malls. They should check for standards like ISI standard mark, Agmark for quality products, FSSAI standard mark, date of packing and date of expiry, etc.

**Increasing punishment**

- One way of doing this is by hiking the penalty, including making it analogous to attempt to murder in some extreme cases of adulteration.

**Testing**

- Authentic testing of food and adulterant detection of various food products is required for value assessment.

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- The government can set up more testing laboratories with acceptable charging fees, where the purity of food can be analyzed by sending a sample of food by the public.

**FSSAI proposal**

The government should consider the following amendments proposed by FSSAI to FSS act, 2006:

- In extreme cases like deaths due to adulteration, Punishment for a term which shall not be less than 7 years but which may extend to imprisonment for life and also fine which shall not be less than Rs. 10 lakh.
- Increasing the punishment for obstructing, impersonating, intimidating, and threatening, and assaulting a food safety officer to the imprisonment of not less than 6 months and up to two years, besides a penalty of up to Rs 5 lakh.

**Conclusion**

Food Adulteration is a grievous crime as it has the potential to cause a long term injury to the health of a person which not only hurt people physically but also economically and socially, it is the duty of the government to protect its citizens from the hidden enemies of the society, playing with the lives of people just for increasing their share of wealth in society. Thus, the provision of stringent punishment must be enacted for them.

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**Process and Issues linked to Emergency Use Authorisation (EUA) of COVID Vaccines in India**

**Emergency Use Authorisation (EUA)**
*This article explains the process of Emergency Use authorization, based on The Indian Express Article "Three Covid-19 vaccine developers seek emergency use approval in India"*
Central Drug Standard Control Organisation (CDSCO) has received applications from 3 vaccine developers seeking Emergency Use Authorisation/Approval (EUA) for their candidate Covid-19 vaccines which are still under trial. These Vaccines are **COVISHIELD, COVAXIN, and BNT162b2.**
**None of the Vaccine developers has yet generated data about the effectiveness of their vaccine from phase-III trials conducted in India.**

**What is the normal process of Vaccine Development?**
In normal circumstances, a Vaccines has to go through several phases, with each phase taking many months to get completed, but in the case of COVID, it is expected that vaccines would be in the market within a year from its start, after seeking Emergency Use Approval (EUA) from their respective governments.
After Pre-clinical testing of Vaccines, it is tested on the human under clinical trials before its mass production.

**Clinical trials**: It involves **testing on humans**. There are 3 phases of clinical trials;
1. **Phase I** of a clinical trial is conducted on **a small group of healthy individuals**. It only indicates what is the ideal dose required to administer in the next stage, it provides evidence of the vaccine's ability to generate an immune response and its safety.
   a. The vaccine is not considered safe if it develops any major complication, however little headache and fevers are expected.
2. **In phase II**, the range of participants is **expanded to a few hundred healthy participants** to check the immune response system in the body and it also assesses the time period for which antibodies last to provide immunity against the virus.
3. **Phase-III** involves a very large group of **people (Thousands of individuals)** to investigate its efficiency among large population groups. Half of the population is administered the actual Vaccine and the other half are administered dummy vaccines.
   b. Individuals administered Vaccines are checked on fixed intervals which can be months in normal conditions to see whether their immune system is responding to the virus or not.
After the Vaccine is successfully tested, it would **require regulatory approval** before it can be produced in bulk quantity.
**Emergency Use Authorisation (EUA)**
The term "Emergency Use Authorisation (EUA)" has been used mainly by the regulatory agencies like **FDA in the US** and some other countries with the following guidelines;
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.
- This data needed to be generated from "well over" **3,000 trial participants**, "representing a high proportion of participants" enrolled.
- These participants needed to be **followed up for any serious adverse effects** for at least one month after all dosages had been given.

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- EUA can be **granted only in a declared public health emergency.**

**Accelerated Approval Process in India**

In India, **New Drugs and Clinical Trials Rules, 2019** governs Clinical trials of new drugs and vaccines and their approvals.

But the term **Emergency Use Authorisation (EUA) has not been used anywhere in rules in India.** However, 2019 rules provide for an **"Accelerated Approval Process"** for granting approval to a drug that is still in clinical trials. The definition of a new drug in the 2019 Rules includes a vaccine.

**Conditions for Accelerated Approval Process**

- There should be a prima facia case that the drug is of Therapeutic benefits.
- "Accelerated approval may also be granted to a new drug if it is intended for the treatment of a serious, or life-threatening condition, or disease of special relevance to the country, and addresses unmet medical needs,".
- Approval can be granted even if "remarkable" effectiveness is reported even from phase-II trials.

Approval granted to drugs or vaccines that are still in clinical trials is temporary, and valid only for one year.

**Examples of granting EUA**

- FDA granted its first EUA for use of Tamiflu drug for infants and young children for the treatment of H1N1 infection for the civilian population in 2009.
- Remdesivir or faviparir, are existing drugs approved for other ailments received EUA for treatment of Covid-19, including in India.

**Issues in EUA of Vaccines**

- Due to tolls or public sentiments, Governments are putting pressure on regulatory bodies to fast-track the entire process of Vaccine development.
- Lack of transparency about vaccine safety and efficacy may negatively impact **people's confidence and willingness to get vaccinated**.
- Some surveys have shown that there is **vaccine hesitancy** among a certain section of people due to the hastening of the vaccine development process.
- Whereas FDA has formulated its guidelines 50% effectiveness and no. of participants, the **Indian regulator has not formulated any such guidelines**.
- Another issue with EUA-approved drugs and treatments is that they can reflect and exacerbate already existing inequities in the health system if the vaccine administered is found out to be ineffective. **It might create a huge burden on the pocket of poor people.**
- There are examples of granting EUA to certain drugs like **hydrochloroquine**, a malaria drug in haste, which later proved to be ineffective treatment, and the risks of taking it outweighed any benefits.
- If a drug proved to be ineffective later on, after its administration to a huge population, it would be very **harmful to the people's confidence, economy, and health system of the country.**

**Way forward**

Concerns regarding use of Vaccines can be addressed when all stakeholders are transparent at every stage of development and not by merely sharing guidelines regarding vaccine safety with the States. It is important that those seeking emergency-use authorisation share the safety and efficacy data with the authorities and public immediately.

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## India-Canada relationship

How India-Canada ties evolved? What are the challenges and opportunities exist in India-Canada ties?
This article is based on The Hindu Article "India summons Canadian High Commissioner; issues demarche over Trudeau's remarks"

**Relevance:**
Recently Canadian Prime Minister expressed his views on Indian farm Bills and supported farmer's protest. Similarly, Canadian PM's coalition partner also praised the farmer's protests in India.
Days after Canada Prime Minister Justin Trudeau came out in **support of protesting farmers**, India summoned the Canadian envoy Friday and warned that such "actions", if they continue, will have a "**seriously damaging impact" on bilateral ties**.

**How India-Canada ties evolved after Independence? ([Source](#))**
- Canada and India have longstanding bilateral relations built upon shared **traditions of democracy, pluralism and strong interpersonal connections**.
- This is complemented by **economic engagement, regular high-level interactions and long-standing people-to-people ties**.
- In 1948 when Canada supported a plebiscite, followed by a ceasefire, in the Indian state of Kashmir.
- Canada opposed India's nuclear tests: In the aftermath of the nuclear tests, India's relations with Canada deteriorated to some extent.
    o India's reluctance to accede to the Non-Proliferation Treaty (NPT) and the Comprehensive Test Ban Treaty (CTBT) the widened gulf between New Delhi and Ottawa for many years.
- Canada is **home to one of the largest South Asian communities abroad,** with approximately 5.6% of Canadians being of Indian heritage (1.9 million people).
- They are highly educated, affluent and industrious PIOs, and well-integrated with the mainstream politics of Canada.
- This is acts as a double-edged sword in India-Canada relationship.
- All these made India-Canada relations as long standing but not without challenges

**What are the areas of co-operation between India and Canada? ([Source](#) )**
- **Trade and Economy:**
    o India is Canada's 9th largest export market
    o India exports include gems, jewellery and precious stones, pharmaceutical products, readymade garments, light engineering goods, iron & steel articles, etc.
    o India's import from Canada include pulses, newsprint, wood pulp, asbestos, potash, iron scrap, copper, minerals and industrial chemicals, etc.
    o Indian companies have invested especially in the IT, software, steel and natural resources sectors.
- **Various MOU's between India and Canada** has been signed in sectors such as
    o Agriculture
    o Civil Aviation and Railways
    o Double taxation etc,
- **Cooperation in Energy sectors**

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- o India and Canada signed a **Nuclear Cooperation Agreement (NCA)** in 2010 for which a Joint Committee on Civil Nuclear Cooperation was constituted by both the countries.
  - o In **2015** when Indian PM visited Canada, **Uranium supply deal** has been signed.
  - o Energy co-operation agreements were signed in 2018 when Canadian Prime Minister visited India.
- • **Education Sector:**
  - o In 2018, India was the largest source of international students for Canada's universities, colleges and schools.
  - o Over 100,000/- Indian students study in Canada. To protect the interests of students a **MOU on Cooperation in Higher Education** has been signed in 2010.
  - o **IC-IMPACTS** (the India-Canada Centre for **Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability**) is a research centre dedicated to the development of research collaborations between Canada and India.
- • **S&T and Space:**
  - o ISRO and CSA (Canadian Space Agency) have signed **MOUs for cooperation in the field of exploration and utilization of outer space** and **two Implementation Arrangements** specifically addressing satellite tracking and space astronomy has also been signed.
  - o ANTRIX, the Commercial arm of ISRO has launched many Canadian Satellites.
- • **Indian Diaspora**
  - o The Diaspora is well represented in federal Parliament and provincial legislatures.
    For ex. New Democratic Party, one of the coalition party of present Canadian government is headed by a person of Indian Origin (Jagmeet Singh).
- • Both the country also formed various organisations such as **Canada – India Parliamentary Friendship Group (CIPEG),** Canada India Business Council (CIBC), Canada India Foundation (CIF), Indo-Canada Chamber of Commerce (I-CCC) for strengthening India-Canada Co-operation.
- • Canada and India are undertaking bilateral negotiations toward both a Comprehensive Economic Partnership Agreement and a Foreign Investment Promotion and Protection Agreement (FIPA) at present

**Challenges in India – Canada relationships: ([RSTV Big Picture](#))**
Though India and Canada have long standing relationships, the co-operation **never achieved its full potential** because of various reasons.

- • **Khalistani separatist factor:**
  - o It is the **single most important challenge** between India and Canada ties.
  - o **Sikhs** constitute a significant proportion of the Indian diaspora; they **make up little less than one percent** (a little over 500,000) of Canada's total population and few leaders in Canada support Khalistan movement to large extent for electoral gains in Canada.
  - o The **Ontario Provincial Parliament adopted a resolution** terming the **1984 anti-Sikh riots as 'genocide'** and many other Canadian leaders also support that even today.
  - o During recent Canadian PM visit to India, a controversial picture where former Sikh separatist Jaspal Atwal has surfaced in news.

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- o Canadian government usually **try to balance the Sikh assertions and government's India policy**. This makes India Canada relationship at stake.
  - o It is also the reason for recent Canadian PM's support to Indian farmer's protest.
- Trade Relations:
  - o Though both the countries are involved in Trade for long time the trade deals are "always underperformed" said by Ministry of External Affairs, India.
  - o **Feminisation of Canadian Trade Policies Canadian Government put in gender clauses in the trade pact.** Though it is revolutionary, but in countries like India it was **seen as a non-tariff barrier**.
    For Ex. Canadian Trade agreement with Chile has entire Chapter devoted to women.
- **Bilateral agreements**: Comprehensive Economic Partnership Agreement (CEPA) and Investment Promotion and Protection Agreements (BIPPA), **have been in negotiation for long time and no progress is reached** by both the countries.
- Strategic Location:
  - o Canada surrounded by developed Western countries does not clearly understand India located with hostile neighbours like China and Pakistan.
  - o The terms and conditions have heavily tilted towards developed countries and Indian interests are not considered seriously so far.

**Solutions:**
- Canada has to understand and **remove Feminisation clause** in trade pacts **or give more time** to countries like India to complete the terms associated.
- Canada is one of the most advanced country in terms of **Renewable Energy**. India with its focus of Renewable energy targets in Nationally Determined Contributions has to strike a deal or MOU regarding renewable energy.
- **Infrastructure and transport sectors**, are potential areas of cooperation and investment. India's ambitious 'smart cities' initiative creates opportunities for Canadian firms like Bombardier etc.
- In 2017 Canadian government announced that **Canada will take in 1 Million more Immigrants**. With US and few other Western Countries are turning down migrants, Canada turned as an **alternative destination for Indians** and India has to leverage that.
- **Canadian Energy reserves:** According to **World Oil Outlook Report**, India's oil demand will double by 2040. Canada's Oil and Liquefied Natural Gas (LNG) resources offer better alternative towards Indian demands.
- **Convergence over China factor**: Canada recently stated to diverge its trade relations and opposed China's diplomacy. India has a potential to become a trade supplier.

**Way forward:**
There is enough potential for both, India and Canada to boost the cooperation and take their relations to next level. But it requires Canadian effort by widening their Indian perspective. This can happen if India by diverting the talks from politically contentious issues

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## Anganwadi centres are in urgent need of an overhaul. Explain

### What is the Anganwadi Centre?

Anganwadi centers (Hindi for courtyard shelter) were started by the Indian government in 1975 as part of the Integrated Child Development Services program (ICDS) to combat child hunger and malnutrition.

However, it evolved to provide other basic services related to primary learning activities and health care such as contraceptive and counseling and supply, providing basic medicine, immunization, health check-up, referral services, nutrition, and health education, as well as non-formal pre-school education.

According to government data, presently the country has 13.77 lakh operational Anganwadi centers (AWCs) in India with a strength of 12.8 lakh workers and 11.6 lakh helpers.

During COVID Pandemic, Anganwadi workers assigned the responsibility of local-level surveillance in different parts of the country.

### Why an urgent need for an overhaul?

Kasturirangan committee in its report pointed out that unless the imparting of education is methodically approached right from the toddler level it is near impossible to fix the curve of education as an individual advance in age. Anganwadi centers (AWCs) are the right place to do that but suffering from many issues requires urgent attention.

**First** is the issue faced by AWCs due to inadequate infrastructure. A fourth of the operational AWCs lack drinking water facilities and 36 per cent do not have toilets.

**Second** is problems related to ICDS services that AWCs are providing. Only a limited number of AWCs have facilities like crèche, and good quality recreational and learning facilities for pre-school education. ICDS beneficiaries do register for services but because the Anganwadis lack adequate facilities, they turn to paid options. Privately-run centers come at a price, hitting low-income families the harder.

Also, the learning approach followed at Anganwadi centers is obsolete and not suitable to develop the skills required at present. The present research has shown the significance of the playing-based learning approach with effective supplementary nutrition in the cognitive development of children which is not followed appropriately at Anganwadi centers (AWCs).

**Third** is the issues related to the capacity building of the Anganwadi workers (AWWs), ASHAs, and ANMs. Frontline workers still are not provided with better training and incentives like better career prospects, service conditions.

**Fourth**, AWCs are also lacking in availability of general services such as good quality meals, contraceptives and medicines, and regular health-related counseling.

**Fifth**, Anganwadi Workers all over the country are being treated like unskilled workers. Their monthly payment, which is very little compared to the Minimum Wage criterion, is not enough to meet their home expenses.

### What needs to be done?

The government has recently launched the Saksham Anganwadi Scheme which aims to upgrade 2.5 lakh such centers across the country. But it is up to the states to make these initiatives successful. Following are the suggestions for making improvements to AWCs.

**First**, there is an urgent requirement for capacity building and infrastructure improvement of Anganwadi centers (AWCs). Following are suggestions for the same:

**Capacity building**

- Anganwadi workers (AWWs) must be provided with good initial training before being inducted into the centers. Apart from this, there should be provisions for regular training and sensitization programs for the workers to adapt to new developments.

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- They need to be provided with better incentives like better monthly payments, good career prospects, and a conducive work environment.
- State governments need to pay special attention to this front as it is done by states like Kerala, Telangana, and Tamil Nadu.
- The Centre must increase the number of workers at the AWCs

### Infrastructure improvement
- There is a need to improve the sanitation and drinking water facilities along with the power supply.
- Anganwadi centres must be supplied with sufficient medicines and contraceptives.
- Recommendations by committees and think thanks like NITI Ayog needs to be incorporated in policies and schemes by the government.

### Use of Technology
Technology can also be used for augmenting the service quality of AWCs.
- AWWs have been provided with smartphones and their supervisors with tablets, under government schemes to make good use of technology.
- Smart applications (Apps) must be developed for various purposes such as tracking the distribution of take-home rations and supplementary nutrition services. For example, in Andhra Pradesh and Telangana, Anganwadi centers have been geotagged to improve service delivery.

**Second,** best practices from states need to be followed everywhere. For example;
- Nutri TASC tool developed by the Government of Andhra Pradesh does name-based tracking of registered beneficiaries under ICDS services which helps in their better monitoring.

**Third**, the government must take care of the community workers and honor their contribution in the fight against COVID-19 and undernutrition in the country. They must be treated as employees and skilled workers by paying adequate remuneration.

### Conclusion
AWCs play an important role in improving basic child learning and health needs for the poor people and help the government to implement its various programs especially related to child and women development.

Thus, the good health of AWCs is the need of the hour. Steps like Saksham Abhiyan and technological up-gradation by states like Gujarat are positive steps but not sufficient considering issues AWCs are grappling with. Hence, the government must resolve the issues and improve the functioning of AWCs through better schemes and adhering to recommendations of think tanks like NITI AYOG.

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**Progress on Paris Climate Change Agreement: In India and world**

**About Paris Agreement (COP 21)**

- As the Kyoto Protocol ultimately failed to induce significant emission reductions on a global scale, the Paris Agreement was adopted at the COP21 held in Paris.
- It aims to strengthen the global response to the threat of climate change and specifies long-term goals regarding global average temperatures, adaptation to climate change, and finance flows
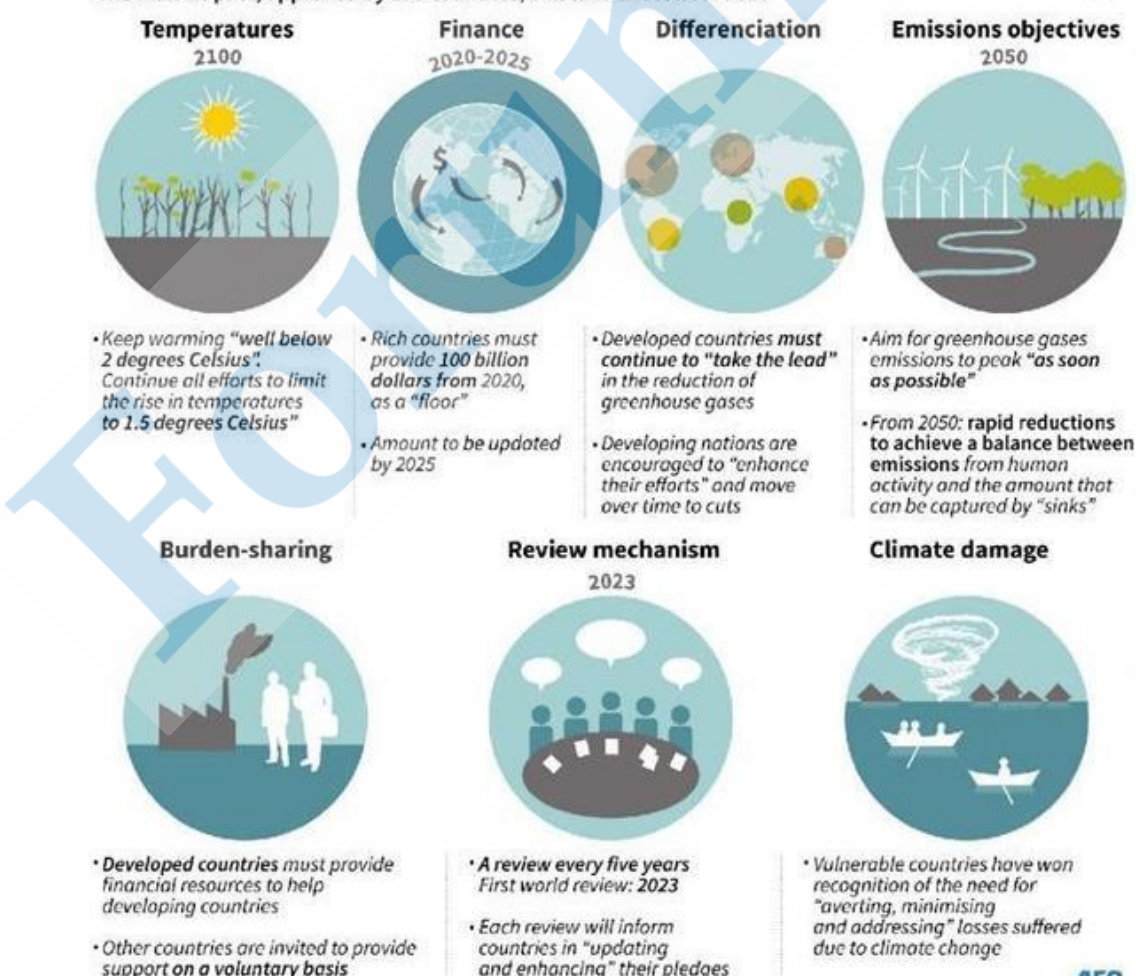
**Key differences between the Kyoto Protocol and Paris Agreement**

| | |
|---|---|
| 1.Legally binding | 1.Not Legally binding |
| 2. Does not bind developing countries to cut down their GHG emissions. | 2. Makes all nations voluntarily commit on their own domestic emission reduction targets. |
| 3.Top Down approach (sets targets) | 3.Bottom-up approach (INDCs) |
| 4.Penalty imposed in-case of non-compliance | 4.No penalty |
| 5. Centrally defined carbon market, with mechanism to offset from lower income countries (CDM) | 5. No mention of market but article 6 provides a hook for existing and new markets to count. |

**Key aspects of Paris agreement**



**The Paris climate agreement: key points**
The historic pact, approved by 195 countries, will take effect from 2020

**Temperatures** 2100
- Keep warming "well below 2 degrees Celsius". Continue all efforts to limit the rise in temperatures to 1.5 degrees Celsius"

**Finance** 2020-2025
- Rich countries must provide 100 billion dollars from 2020, as a "floor"
- Amount to be updated by 2025

**Differenciation**
- Developed countries must continue to "take the lead" in the reduction of greenhouse gases
- Developing nations are encouraged to "enhance their efforts" and move over time to cuts

**Emissions objectives** 2050
- Aim for greenhouse gases emissions to peak "as soon as possible"
- From 2050: rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by "sinks"

**Burden-sharing**
- Developed countries must provide financial resources to help developing countries
- Other countries are invited to provide support on a voluntary basis

**Review mechanism** 2023
- A review every five years First world review: 2023
- Each review will inform countries in "updating and enhancing" their pledges

**Climate damage**
- Vulnerable countries have won recognition of the need for "averting, minimising and addressing" losses suffered due to climate change

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**Goals:**

1. **Temperature**: hold warming below 2°C above pre-industrial levels with effective efforts to limit warming to 1.5°C
2. **Adaptation**: Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development
3. **Low Emission Finance flows:** Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development
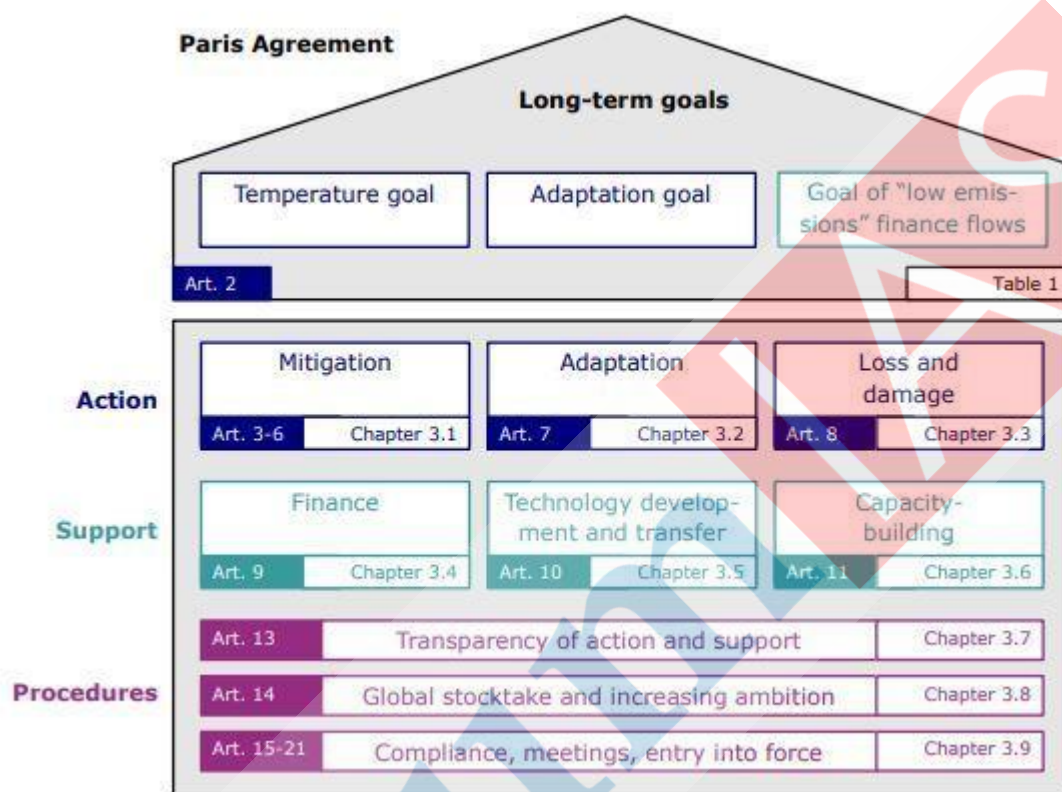


**Approach:**

**Intended Nationally Determined Targets:** Unlike, the Kyoto Protocol, the Paris Agreement gives flexibility to both developed and developing countries to determine their own targets. The INDCs set out each country's plan for addressing climate change, including a target for reducing GHG emissions, and how the countries intend to achieve that target.

**Development after the Paris agreement**

1. **COP22:** The COP22 was held in Marrakech, Morocco in 2016 to discuss and implement plans about combatting climate change in the lines of the Paris Agreement
2. **COP23**: COP 23 was held in Bonn, Germany in 2017. A major outcome of the COP was the **Talanoa Dialogue.** It is an inclusive and participatory process that allows countries, and non-Party stakeholders, to share experiences and showcase best practices in order to urgently raise ambition in nationally determined contributions (NDCs).
3. **COP 24:** COP 24 was held in Katowice, Poland in 2018. The biggest achievement was the adoption of the Paris Rulebook which establishes the rules and processes needed to provide the operational guidance for fulfilling the ambition of the Paris Agreement.

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**What are the positive developments on Paris Agreement?**
**India's performance in CCPI:** In a recently released Climate Change Performance Index (CCPI), India ranked high along with the European Union and the United Kingdom and continued to remain in top 10 for the second time in a row.

- India has received High ranking on all CCPI indicators except 'renewable energy'

**US re-joining Paris deal:** As per the reports, US president elect Joe Biden has announced that he will issue an executive order to re-join the Paris Agreement on his first day in office on 20 January 2021. With this signature, all 197 signatories to the United Nations Framework Convention on Climate Change will have ratified the historic deal.
In June 2017, President Donald Trump announced U.S. exit from the Paris Climate Deal, but the withdrawal only took effect in November 2020.

**China's Commitments:** China has announced significant climate change announcements at the virtual UN General Assembly in New York.

- China would become carbon net-zero by the year 2060.
- China has made a small but important change in China's already committed target for letting its emissions "peak", from "by 2030" to "before 2030".

It is significant as China is the biggest emitter in the world with accounting for around 30 percent of global GHG, followed by the US, EU, and India.

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**China's coercive environmentalism**

- **Chinese Model:** Chinese model of coercive environmentalism is finding an echo among some Western environmentalists. They believe planetary survival must be the foremost objective of the moment and all other considerations must be subordinated to it.
- **Issues with the model:** Whatever the merits of authoritarian environmentalism, it has little political chance of being replicated in democracies. Plural societies are focused on improving the nature of liberal environmentalism that relies on political consensus in drafting new environmental norms and their effective enforcement as well as the reliance on market-based mechanisms.

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- **Success Stories:**
  - In total, eight international jurisdictions have made good progress since 2015, including Ethiopia, Morocco, India, European Union, Canada, Chile, Costa Rica, and Argentina.
  - An increasing number of countries are adopting net zero emissions targets. Some, like the UK, have dumped coal, and are well on the way to achieving those targets.

**Challenges in achieving Paris agreement targets**
Climate Action Tracker is an independent scientific analysis produced by two research organizations tracking climate action since 2009. It monitors 32 countries, accounting for more than 80 percent of global emissions.
Countries like the Russian Federation, Saudi Arabia, the United Arab Emirates, and Indonesia have either made no progress since 2015 or having highly insufficient targets.
Today, Australia's emissions are at a seven-year high, and continue to rise with the setting up of new coal and gas projects.
In 2018, Brazil recorded the world's highest loss of tropical primary rainforest of any country — 1.3 million hectares — largely in the Amazon.

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**India's Intended Nationally Determined Contribution (INDC)**
- To reduce the emissions intensity of GDP by 33%–35% by 2030 below 2005 levels;
- To increase the share of non-fossil-based energy resources to 40% of installed electric power capacity by 2030, with help of transfer of technology and low-cost international finance including from Green Climate Fund (GCF).
- Increase renewable energy generation to 175 GW by 2022;
- To create an additional (cumulative) carbon sink of 2.5–3 GtCO$_2$e through additional forest and tree cover by 2030.

**India's progress against objectives**
India's per capita emission from fossil fuels (in 2017) is by far the lowest among major economies, i.e.
- The US: 15.74 MT
- China: 7.72 MT in China
- The EU: 6.97 MT
- India: 1.83 MT carbon dioxide (CO2)

*Climate Action Tracker* website has rated its climate efforts as "2-degree compatible", making India the only major economy to achieve such high rating.

As per the report released by a coalition of 14 global think tanks including TERI, India is the only country among G-20 nations that is on track to meet its climate change mitigation commitments of 2 degrees Celsius under the 2015 Paris Agreement:
- The target of achieving 40% of power from renewable sources by 2030 is likely to be achieved several years in advance. Non-fossil sources accounted for about 37 percent of India's power capacity, as of September 2019.
- India is actively reducing the component of coal-based thermal power in its energy mix.
- India's forest and tree cover has increased by only 5,188 km2 , yielding a 42.6 million tonne carbon sink increase.

**India's intiatives against Climate Change**
**National Action Plan on Climate Change (NAPCC):** This action plan aims to provide a low carbon development path for India. The plan has eight missions, focusing on solar, energy efficiency, sustainable habitat, water, ecosystems, forest cover, sustainable agriculture, and climate research.
**ISA:** Indian entered into International Solar Alliance with France, in 2015 at UNFCCC CoP 21 Paris, France with an aim of collaboration on the development of solar energy resources among solar resource-rich countries to address their special energy needs.
India's **draft National Forest Policy** calls for a minimum of one-third of India's total geographical area to be under forest or tree cover and supports the NDC target of creating an additional (cumulative) carbon sink of 2.5–3 GtCO$_2$e by 2030.
While India still relies on coal, its renewables industry is making huge leaps forward, with investments in renewable energy topping fossil fuel investments.
**National Solar Mission** aims to install 100 GW of solar energy by 2022, which is part of India's long-term goal to install 450 GW of renewable energy by 2030.
**BS VI emission norms:** India adopted BS VI vehicular and fuel emission standards as a part of its Auto Fuel Policy. Effective April 2020, India now has ultra-low sulfur fuel (10 ppm) in use across the country. The BS VI emission norms for 2-wheelers are also among the most stringent in the world
**FAME-II Scheme:** Scheme provides Rs. `10,000 crore ($1.4 billion) for demand incentives, charging infrastructure subsidies, and battery storage manufacturing Spanning over three

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years from 2019 to 2022. India has a target of 30% share of electric vehicles (EV) in new sales for 2030.

**National Electric Mobility Mission Plan 2020** aims to subsidize the cost and facilitate the sale of 6 to 7 million hybrid and electric vehicles over five years. To strengthen battery storage, **the National Mission on Transformative Mobility and Battery Storage** is designed to support the battery and EV component manufacturing.

**National Mission for Enhanced Energy Efficiency (NMEEE)** aims to improve efficiency in industry and implement demand-side management programs. The main program**, the Perform Achieve Trade (PAT)** scheme, establishes an energy trading program for high emitting industries – cement, aluminum, steel, iron, textiles, and paper and pulp.

**Conclusion**

Renewable energy is the key to unlocking rapid decarbonization. It already supplies more than 26 percent of global electricity generation and its costs are dropping rapidly. To accelerate this fundamental transition, more governments need to adapt and improve policies that enable renewable technologies to be rolled out faster.

Aggregation of the NDCs of countries do not add up to keep temperatures within the 2 degrees C limit. Much more action on GHG reduction, the introduction of green technologies, and adaptation are needed.

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## INDIAN PHARMACEUTICAL SECTOR CHALLENGES AND REFORMS

**Source:** PIB, Indian Medicine Industry-RSTV , FDI data of Ministry, Mint,
**Relevance:**
- Recently PM follows up his 3 city visit by a virtual meeting with 3 more vaccine developers based in Pune and Hyderabad
- Ambassadors of 100 countries are scheduled to arrive in Pune on December 4, to visit Serum Institute of India and Gennova Biopharma.

**Sweden** has already acknowledged **India's role as the 'pharmacy of the world'** and is **focusing on expanding bilateral cooperation in the areas of health and life sciences** in view of the Coronavirus pandemic.

### How big is Indian Pharma Sector?
- From **2000-2019 Pharma sector alone contributed for FDI inflows worth $16.2bn** and it is expected to rise during COVID pandemic.
- Recent **Economic Survey** acclaimed Pharma sector as one of the **top 5 sector which reduce trade deficit of India**
- More than **80% worlds Anti Retro-viral drugs depend on India**
- India is the **largest producer of vaccines** even before COVID pandemic and c**ontrolled more than 50% of global supplies**.
- **Bio-Pharma is the largest sector** contributing to **62% of the total revenue**
- It is estimated that medical tourism in the country can grow and become a 9 billion dollars industry this year
- **20% of global generic medicine** has been controlled by India.

### How Indian Pharma Sector is regulated?
- **Under Drugs and Cosmetics Act 1940 (For Source click here)** was the central legislation that regulates India's drug and cosmetic import, manufacture, distribution and sale.
    - The Act clearly **defines the spurious drugs, adulterated drugs and mis branded drugs**.
    - This also **established the Central Drugs Standard Control Organization (CDSCO)**
    - The Act **establishes the regulatory control** over the manufacture and sale of drugs
    - **State Health department has to regulate** the manufacturing, sales and distribution of drugs
    - Drug Inspectors will control the implementation at ground level.

### Central Drugs Standard Control Organization (CDSCO) Source
- Central Drug Authority for discharging functions assigned under the Drugs and Cosmetics Act
- The CDSCO works in the Directorate General of Health services, is a division in Ministry of Health and Family welfare
- The CDSCO is headed by Drug Controller General of India (DCGI).
- It was advised by Drug Technical Advisory Board and Drug Consultative Committe

### Potential lead for enormous growth of Pharma Sector:
- The **growing population** of over a billion along with diversity among people offers **An excellent centre for clinical trials**

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- Focus on **low cost, efficient** drugs lead to growth of the sector in terms of **Value and Volume**
- **Low cost of production and Low R&D costs** in *India*
- A **huge patient base** from domestic and from foreign as a medical tourist
- Improving **healthcare infrastructure** in India
- An **increase in lifestyle-related diseases** such as diabetes, cardiovascular diseases, and central nervous system.
- **Penetration of health insurance** is increased
- **Adoption of patented products** by Indian Pharma Sector.
- Patent expiration and **aging population in the US, Europe, and Japan**.

**Challenges in the Pharma Sector:**

- **From regulator side**
  - Doing a post-mortem kind of work by inspecting the drugs after getting into market
  - Low data collection on drugs coupled with insufficient training to drug inspector leading to huge malpractice among drug sellers
- **From Marketing side**
  - **Medical representatives and drug sellers** inefficient training to meet the man power along with prevalence of Quack(fake doctor) increases risk of life of patients
  - Pharma companies **unethical pratice of providing freebies and gifts** to Doctors to promote their drugs
- **Quality is getting compromised** due to high demand for drugs among people. This is evident by wide scale recall of drugs in India.
- **Low R&D investment:** India only invests 0.7% of its GDP for research and investment. This is very low compare to the demand in the sector
- **International Challenges**
  - Global Pharma companies accuse Indian pharma companies as an abuser of Patent laws and **criticise India's Compulsory Licensing Policies.**
  - India nearly **90% depend on China for its Active Pharmaceutical Ingredients**

**Solutions:**

- **Implementing the recommendation of Malshekar committee on drug regulation**
  - Recommend a new structure for the Drug Regulatory System in the country including the **setting up of a National Drug Authority**
  - Recommended that the State Drug Control Organisations should be urgently strengthened. ([for source](#))
- **Creating a Digital Database** for patients, drug usage and risk associated with the intake of drug
- **Revise the ethical code** for Pharma companies to discontinue freebies and gifts
- Government need to **upgrade the quality standards and qualities** of Medical representatives and drug sellers.
- **Promote country specific research** for R&D and increasing the R&D spending
- **Rework with the IPR policies** to make Indian Pharma companies for encouraging more patents.
- Government need to frame a **National Plan on self-sustaining in API's** and avoid over dependence on China.
- Government need to frame a policy to **Utilise the traditional Knowledge** in drug manufacturing

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Though the sector is highly capital intensive, the sector developed into a global leader in Pharma products. Now It is time to implement better policies in regulation and encourage the sector to produce more API's in India to avoid over dependence.

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**Central Vista Project: What are the benefits and issues associated to it?**

Amid the controversies surrounding the Central Vista Project, the PM of India **laid the foundation stone of the new Parliament buildin**g. Objections were raised against the project due to the land-use changes and environmental clearances issue to the project by authorities. The matter is being heard by the Supreme Court.

In its recent order, the **Supreme Court barred the government from any further activities** related to the Central Vista Project and reserved the judgment. In its judgment, SC stated **no construction, demolition, or chopping of trees** should take place at the Central Vista project. However, **SC allowed the government to lay the foundation stone** of the project and carry on paperwork.

**About Central Vista Project**

The present Parliament building was **inaugurated in 1927**. It was having three halls, the Chamber of Princes, State Council, and Central Legislative Assembly, known as Library Hall, Rajya Sabha, and Lok Sabha respectively in the post-Independence era. Two floors were added in 1956 to accommodate the enhanced requirements.

Central Vista project includes the **construction of triangular Parliament building, common Central Secretariat and revamping of the 3-km-long vista or Rajpath — from Rashtrapati Bhavan to India Gate.**

**Features of New Parliamentary building**

- New Parliament Building Complex, will be of triangular shape, spreading over 64,500 square meters with the capacity of housing 1,224 Members of Parliament. By 2024, there will be a chamber for every MP.
- It will have a grand Constitution Hall showcasing an original copy of the Constitution.
- The Central Vista project has a work **completion deadline of 2024** and the new **Parliament building complex is expected to be complete by 2022** to commemorate 75 years of India's Independence.
- The building will be **energy efficient** and accessible to all.
- The Lok Sabha and Rajya Sabha Halls will have **high-quality acoustics and audio-visual facilities**, improved and comfortable seating arrangements, effective and inclusive emergency evacuation provisions, with high-level security for the members.
- There will be S**eamless access between the current and new Parliament buildings**, the Chamber for Members, the Parliament Annexe, and Library buildings will form a legislative enclave, which will stand as an iconic and modern colosseum of democracy.

**What are the issues raised against Central Vista Project?**

Notification for the project was issued in April and cleared by the environment ministry's Expert Appraisal Committee immediately when the country was suffering from COVID Pandemic. Critics called the project ill-timed with several loopholes in the approval process were pointed out.

**Lack of transparency**

- As per the reports, planning for the project is ongoing since 2015, but behind the curtains. There is no information about the tender issued or either the process followed, or the criteria for selection of companies building it. There was no exhibition of the proposed buildings was held, no data revealed, no models or drawings displayed.

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## Changes in heritage status

- Central Vista has been accorded the highest Grade 1 heritage status by the Unified Building Bye-Laws of Delhi. Grade 1 classified buildings cannot be changed, and "no intervention can be made unless it is in the interest of strengthening and prolonging the life of the buildings".
- However, later on, Heritage Conservation Committee made a distinction between pre-Independence and post-Independence buildings to redefine the status of 'heritage', allowing the demolition of post-independence constructions, built by Indian architects and engineers in the 60s.
- It effectively, allowed the demolition and replacement of buildings like Krishi Bhawan, Udyog Bhawan and Rail Bhavan, in addition to the National Museum and the Indira Gandhi National Centre for the Arts (IGNCA).

## Land Use Changes

- In 2020 Delhi Development Authority made changes in the land use to facilitate the use of public open spaces such as a district park and children's play area be changed for use as government offices.
- Before notification, there was a 60/40 split between public/ semi-public (*60 per cent*) use including museums, galleries, centres of arts, national library, (*the Delhi*) high court, etc., and government use (*40 percent*).
- After notification, it was changed to 95 percent for government use and 5 Percent for public and semi-public use.

## Environment clearance

- On April 22, the new Parliament building was granted environmental clearance from the Ministry of Environment, Forests & Climate Change without any Environment Impact Assessment (EIA).

## Cases filed

- *Rajeev Suri vs. the Union of India* —was filed in the Delhi High Court in March 2020 against this land-use change and another petition was filed regarding violations of the heritage status of Central Vista.
- The petitions were transferred to the Supreme Court and are now in the apex court's domain.

## Why new Parliament complex is required?

- Firstly, the Current Parliament was built in 1927 to house the legislative council and was **not intended to house a bicameral legislature** that the country has today. The **current building will be under more stress** when the number of seats to Lok Sabha and Rajya Sabha are raised.
- Secondly, the present Parliament House **signifies an imperial origin**, whereas India is a successful citizen-led democracy. Thus, the present parliamentary building is **not in accordance with the aspirations of independent Indian citizens** and the new building will stand out as an institution created by 130 crore citizens.
- Thirdly, there are **international examples** of building new parliamentary structures after gaining independence.
  - The Capitol Building in the USA was constructed within 25 years of the country's independence.
  - In Brazil, the National Congress Building was constructed, almost 70 years after Independence, in 1960.

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- Fourthly, Present Parliamentary complex was built by the British on their own patterns and designs. New building's design and interiors will capture Indian values and the rich diversity of **our regional arts, crafts, textiles, architecture, and culture**.
- Fifthly, World history proves that Public infrastructure projects playing a **key role in reviving economies** in distress. For ex; the Tokyo Tower in Japan, built after World War II, provided employment to thousands of workers, instilled a greater sense of nationalism, and contributed to the resurgence of the Japanese economy.
- Sixthly, existing building **does not conform to fire safety norms** and is not earth quake proof. Water and sewer lines are also haphazard and this is damaging its heritage nature. 2001 Parliament attack is a fit example questioning the safety.

**Conclusion**

Central Vista Project should be presented as the project fulfilling the aspirations of people, not something imposed on the people. All the valid concerns should be taken into account and proper assessment should be carried out to ascertain that the project will not have any negative impact.

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**Qrious Project: Why oil prices are so high in India? How and why should India achieve "End of oil-age"?**

Adding to the already high stress on the economy due to technical recession and inflation, OIL MARKETING companies have hiked the prices of petrol and diesel by over Rs. 2 and by nearly Rs. 3.50, respectively, since November 19, after a period of 59 days when prices were held static.

*The present surge in oil prices is driven by the hope that COVID vaccines would lead to demand recovery and OPEC+ will delay a planned rise in oil output.*

Though this price rise may be a temporary phenomenon, but for India, the high oil price is a persistent problem.

**Why oil prices are so high in India?**

The retail price of oil in India is made up of multiple components i.e., **Global crude oil prices + Margin of transportation and refining + Central Excise Duty + Dealer's Commission + State VAT (Value Added Tax).** Fluctuation in the final price of oil in India can be caused by any of these components.

However, **India's retail fuel price is one of the highest among its neighboring countries**. Following are some of the factors contributing to high prices in India:

Firstly, India is **heavily dependent upon import**s for its oil requirements. India is the third-largest oil consumer in the entire world, with 84% of it being imported. Any major fluctuation in the international Crude prices due to events like Iran sanctions or the Syria war directly impacts oil prices in India.

Secondly, **high excise duty by center and VAT by states** on petrol and diesel is the most important factor behind high oil prices in India. Taxes make up for nearly two-thirds of the retail selling price. During lockdown even though International crude oil prices crashed sharply but oil prices kept on increasing as the government imposed additional duties and cesses on oil to generate additional tax revenues. In Short, the tax rate on fuel in India is highest compared to any other country in the world.

Thirdly, Under the present **dynamic fuel pricing system** fuel prices are getting revised on a daily basis. Thus, any hike in the international market is getting reflected immediately.

Fourthly, As mentioned above too, India is import-dependent for its fuel requirements, thus the **exchange rate** also plays an important role in determining the fuel prices. Depreciation of the Rupee against the Dollar will increase the volume of Rupee required to make payment in terms of Dollars.

**How India can end the oil age?**

The oil age is over a hundred years now since 1911 when Winston Churchill as minister of the navy decided to convert the British naval fleet from coal to oil.

**End of Oil age is the theory** first formulized in 2005 that said oil age will end due to the **fall in production of oil** and non-replacement of it along with skyrocketing prices. But the **theory was reversed** recently after the US Shale gas revolution and the emergence of Electric vehicles after Paris Climate Summit, and now advocates that all these developments will make oil obsolete**(due to falling demand)** within few decades of Peak Oil demand.

**There is no consensus on the timing of peak demand**. For instance, While BP believes, it has already peaked; the International Energy Agency (IEA) projects it will peak by 2028.

However, India needs to create its own strategy to bring an end to Oil age in the country. Following suggestions can be adopted for the same;

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- India must develop its own world-scale, competitive, manufacturing systems for **photovoltaics (PVs) and battery storage** to provide affordable solar units and reduce dependence upon countries like China.
- India must prepare a **clean energy technology strategy** to identify relevant "breakthrough technologies", establish the funding mechanisms and create the ecosystem for International and domestic partnerships.
- **Speedy migration to electric mobility** as the transport sector accounts for around 70% of the total diesel consumption. This would require effective incentives in the form of subsidies and infrastructure to promote electric buses. Dedicated electric corridors for trucks could be planned.

**Why India should end the oil age?**

Firstly, **Vehicular pollution c**aused by Petrol and diesel-based vehicle account for 40-80% of total air pollution, it is also one of the reasons behind high NCR air pollution, for which initiatives like odd-even scheme and BS-VI were implemented. India has been at the forefront of environmental protection initiatives like the Paris Agreement to shift the global energy system away from fossil fuels. thus, phasing out fossil fuel is the need of the hour.

Secondly, **Oil is one of the heaviest burdens on India's exchequer.** India spent USD 111.9 billion on oil imports in 2018-19, up from USD 87.8 billion in the previous fiscal year.

Third, over-dependence on imports for crude oil is also **weakening Indian currency**. Since oil is procured by making payment in US dollars, in case of price rise, India needs to ensure sufficient availability of Dollars in exchange of Rupees, which results in depreciation of Rupee. 1991 balance-of-payments crisis in India was caused by Oil prices increase and unavailability of Dollars in sufficient amount.

Fourth, the depreciation of the rupee together with rising oil prices leads to high prices of commodities, which results in **inflation**.

Fifth, over-dependence on imports also **affects India's foreign policies** to maintain a sufficient supply of oil. India's foreign policy towards Middle-East and West Asia is largely affected by oil requirements.

For countries like India moving away from oil is not going to be easy like its developed counterpart. India needs some time and decreases in global fuel prices in the near future so that this transition becomes easier for India

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### What is net zero target? How fair and realistic these targets are?

**Climate Ambition Summit,** co-hosted by the UK, France, and the UN, on the fifth anniversary of the 2015 Paris Agreement has brought back the debate on the fairness issues regarding the Net Zero targets and the pathways regarding greenhouse gas emission reduction.

### Status of emission reduction

Countries w**ere expected to submit their upgraded national target before December 2020**, but due to COVID disruption, only 13 countries, covering 2.4 percent of global emissions, have submitted such targets.

Although COVID lockdowns resulted in a temporary 4.2–7.5 percent reduction in GHGs, **the achievement of 1.5 degrees Celsius target would require global carbon dioxide emissions to fall by 45 percent from the 2010 levels by 2030**.

According to Emissions Gap Report 2020, Despite a dip in 2020 carbon dioxide emissions due to Covid-19, the world is still heading for a **temperature rise in excess of 3 degrees C, by the end of this century.**

According to the latest State of the Global Climate provisional report, **2020 is set to be among the three warmest years on record**, and the **decade 2011-2020 would be the warmest ever.**

However, several states have announced their "net zero" targets in the recent past including all G-7 states (except the US) and 11 G20 members, with mid-century (2050 or 2060) net-zero targets. The US is also expected to join this league very soon.

**Also Read –** **Progress on Paris Climate Change Agreement: In India and world**

### What is Net Zero Target?

A "net-zero" target refers to reaching net-zero carbon emissions by a selected date under which any emission (carbon dioxide or other GHGs) from any source is balanced by absorbing an equivalent amount of emission from the atmosphere. It differs from zero-carbon, which requires no carbon to be emitted.

### How fair are these net-zero targets?

Before applauding the Paris Agreement and resulting efforts by the countries to reduce greenhouse gas emissions, the net-zero targets and following issues must be taken care of to make the mitigation efforts of countries more effective, accountable, and realistic.

- **Firstly,** such long-term commitment, ending in mid-century rely on promises of future carbon removal – instead of reducing emissions now and are **not coupled with short-term actions.** There is a mismatch between short-term actions and long-term commitments.
  - o Negative emissions (such as carbon dioxide removal) technologies, required for zero-emission targets are largely unavailable. If the technologies anticipated to remove huge quantities of carbon in the 2040s and 2050s fail to work as expected it might have a devastating impact on the climate.
- **Secondly,** there is no mechanism to ensure **accountability for long-term net-zero goals** and short-term national contributions. States are not obliged to achieve their self-selected targets. Other than the requirement to provide justifications for the fairness and ambition of the state's targets, there is no mechanism to review the adequacy of their contributions.
  - o The compliance committee under this agreement is facilitative to help countries falling behind on their commitments get back on track. There are no penalties for noncompliance.

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- **Third,** the issue of **equity and a fair share** of states in emission mitigation has not been included in the Paris agreement, Unlike 1997 Kyoto Protocol that differentiated countries for emission reduction targets based on their past history of emissions. It is resulting in litigations and disputes between the countries over their commitments.
    - They do not seem to address the issue of fairness between the present and coming generations. On this issue, a case was filed recently by six Portuguese youngsters, including two children in the European Court of Human Rights against 33 European states.

Though the pathways to net-zero target are plagued by certain loopholes on the fairness and compliance front, yet it must be appreciated that countries are taking initiatives in pledging their support to mitigate climate change. Thus, a more liberal pathway seems to need an hour. However, a proper mechanism for monitoring and accountability of these long term commitment needs to be put in place.

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