



## Economic Impact of School Shutdown during Covid-19

**For Prelims:** Gross Domestic Product, Asian Development Bank.

**For Mains:** Impact of Covid-19 on Indian Education System and Economy.

### Why in News?

According to an [Asian Development Bank \(ADB\) paper](#), the [Gross Domestic Product \(GDP\) of India](#) is likely to see the **highest decline in South Asia due to Covid-19 related school-shutdown.**

- **School closures** led to the **contraction in global GDP and employment.** This scenario is **expected to aggravate further with time.**
- India is among those countries that had the **longest school closures during the Covid-19 pandemic.**

### What will be the key impact on Economy?

- **Global Scenario:**
  - **Impact on GDP:**
    - GDP has been projected to **decline to 0.19% in 2024, 0.64% in 2028, and 1.11% in 2030** with a total estimate of \$943 billion.
  - **Impact on Skilled Labour:**
    - School closures will **deny about 5.44 million people around the world employment in the skilled labor force** by 2030.
    - Employment is **likely to decline to 0.05% in 2024, 0.25% in 2026, and 0.75% in 2030** with a total loss of wages amounting to \$94.86 billion.
  - **Impact on Unskilled Labour:**
    - Employment is **estimated to decline to 0.22% in 2025, 0.51% in 2027, and 1.15% in 2030.**
    - Nearly **35.69 million people would migrate towards the unskilled labour-force** amounting to \$121.54 billion lost wages in 2030.
- **Different Impact on Different Economies:**
  - Across Asia, **worst-hit economies** include those with **significant student populations from rural areas and those in the poorest and second wealth quintile.** This is due to internet connectivity issues, therefore, inaccessibility to online education.
  - **As many impacted students shifted to unskilled labour-force, the economies with high share of unskilled labour** employment experienced significant **learning and earning losses.**
- **Indian Scenario:**
  - **Impact on GDP:**
    - In percentage terms, its **GDP will decrease by 0.34% in 2023, 1.36% in 2026, and 3.19% in 2030.**
    - **By 2030, India will account for 10% of the global GDP decline of \$943 billion.**
  - **Impact on Labour:**
    - At present, India's workforce comprises **408.4 million unskilled and 72.65**

million skilled labour force.

- A **significant migration towards unskilled work force** is likely to happen with **1% and 2% decline in skilled and unskilled labour jobs**, respectively.

## What is Gross Domestic Product?

- **GDP** is a **measure of economic activity** in a country. It is the **total value of a country's annual output of goods and services**. It gives the economic output from the consumers' side.
- $GDP = \text{Private consumption} + \text{Gross investment} + \text{Government investment} + \text{Government spending} + (\text{exports} - \text{imports})$

## What is Asian Development Bank?

- **ADB** is a **regional development bank established in 1966**.
- It has **68 members**. **India is a founding member**. 49 are from within Asia and the Pacific and 19 outside.
- It **aims** to promote social and economic development in Asia and the Pacific.
- As of 31<sup>st</sup> December 2020, **ADB's five largest shareholders** are **Japan** and the **United States** (each with 15.6% of total shares), the People's Republic of China (6.4%), **India** (6.3%), and **Australia** (5.8%).
- It is **headquartered in Manila, Philippines**.

## Way Forward

- The Indian Government is **proactively working towards stabilizing the economy through efforts like monetary easing, fiscal stimulus, and supportive financial regulation**. Recently, it has also launched **e-Shram portal**. However, there is a **need for higher investments in the arena of education along with an emphasis on narrowing the digital divide** to counter the effect of learning losses during the pandemic.
- **Learning recovery** can be supported by conducting **assessments for pandemic-affected students**.
- In the budget, government should prioritize spending on education. **Adequate funding and resources must be directed to students from the rural, economically-weaker and socially disadvantaged groups** that were worst affected by the pandemic.
- Additionally, **youth skill training programmes** must be started for the youth already passed out of the school.
- **Educational reforms must be undertaken** to promote face-to-face as well as remote learning.

[Source: TH](#)

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## 2020 Report on Medical Certification of Cause of Death

**For Prelims:** MCCD Report, Respiratory Illness, Covid-19

**For Mains:** MCCD Report, Causes and Prevention of Diseases, Health

## Why in News?

According to the 2020 report on Medical Certification of Cause of Death (MCCD), the first year of [Covid-19 lockdown](#) saw the highest incidences of persons dying of **respiratory illnesses** in a decade.

## What is MCCD Report?

- The scheme of Medical Certification of Cause of Death (MCCD) was introduced in the country under the provisions of the Registration of Births and Deaths (RBD) Act, 1969.
- Since then, it has been operational in the country, but with varying levels of efficiency across the States/Union Territories.
- Under the scheme, the Office of the Registrar General, India (ORGI) obtains data on medically certified causes of deaths as collected, compiled and tabulated by the Offices of the respective Chief Registrars of Births and Deaths of the States/UTs.

## What are the Key Highlights of the MCCD Report?

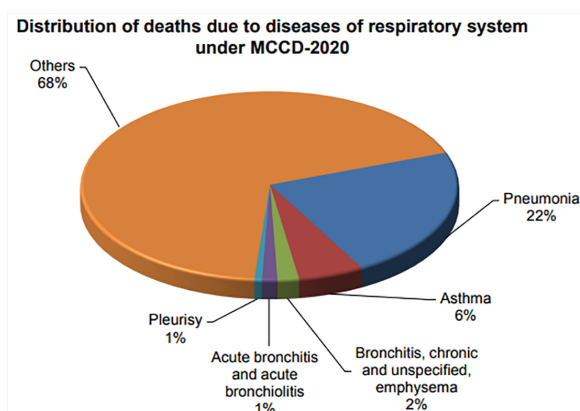
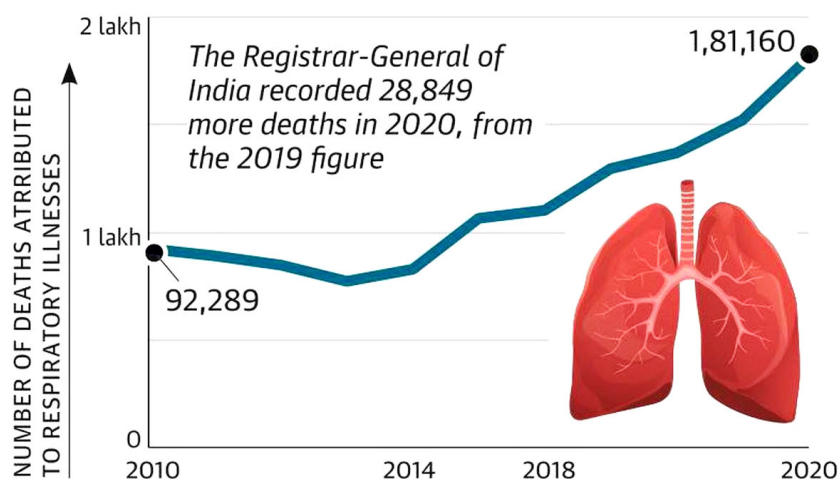
- **Total No. of Deaths:** The total number of deaths, from all causes, in 2020 was 81.2 lakh.
  - The report pegged India's excess mortality for 2020 and 2021 at 47.4 lakh.
  - [Civil Registration System \(CRS\)](#) data reported 4.75 lakh excess deaths from all causes in 2020 over 2019.
- **Medically Certified Deaths:** Medically Certified Deaths account for 22.5% of total registered deaths at national level but after taking into consideration any kind of medical attention received by the deceased at the time of terminal illness, it increased to 54.6%.
  - Around **5.7% of total medically certified deaths have been reported in infants.**
- **Leading Cause-Groups of Deaths:** Nine leading cause-groups of deaths constituting around 88.7% of total medically certified cause of deaths:
  - Diseases of the Circulatory System (32.1%)
  - Diseases of the Respiratory System (10%)
  - Codes for Special Purposes – Covid-19 (8.9%)
  - Certain Infectious and Parasitic Diseases (mainly consisting of septicemia and tuberculosis) (7.1%)
  - Endocrine, Nutritional and Metabolic Diseases (5.8%)
  - Injury, Poisoning and Certain other Consequences of External Causes (5.6%)
  - Neoplasms (4.7%)
  - Certain Conditions Originating in the Perinatal Period (4.1%)
  - Symptoms Signs & Abnormal Clinical Findings "Not Elsewhere Classified" (10.6%)

## How many deaths were caused by Covid-19?

- Covid-19 virus, also a respiratory disease that has been separately recorded in the report as "Deaths reported under Codes for Special Purposes (Covid-19 Deaths)."
- Covid-19 Deaths is the third leading cause group, recording 8.9% of the total medically certified deaths at national level.
- The Union Health Ministry, however, reported 1.49 lakh Covid-19 deaths in 2020.
- As of May 2022, India's official Covid-19 death toll is 5.2 lakh.

## How many deaths were caused by Respiratory Illness?

**Short of breath** | In 2020, India recorded a 10-year high in the number of deaths caused by respiratory diseases. The chart shows the number of deaths linked to respiratory diseases in the past decade



- In 2020, as many as 1,81,160 deaths occurred due to respiratory diseases such as pneumonia, asthma and bronchitis, higher than 1,52,311 such deaths reported in 2019.
- Those **above 70 years were the worst affected** by the respiratory diseases accounting for the highest incidences of deaths - 29.4 % of total registered medically certified deaths.
  - This was **followed by 55-64 years** reporting 23.9% deaths; the age group 65-69, also reported a significant number of deaths - 4.5%.
- The major number of deaths is concentrated in the age group of 45 years and above, constituting 82.7% of total deaths in the group.

[Source: TH](#)

## Coal Gasification

**For Prelims:** Coal Gasification, Syngas, Hydrogen Economy

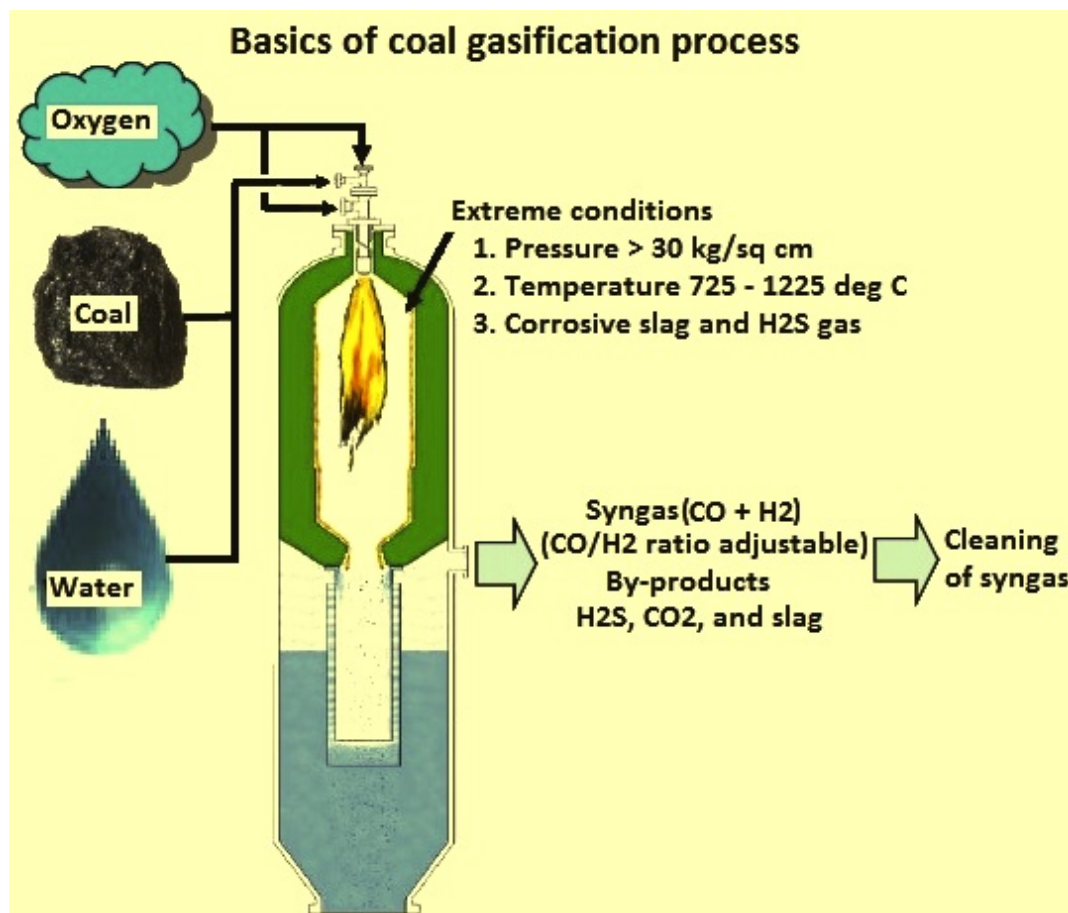
**For Mains:** Coal Gasification, Hydrogen Economy, Concerns Associated with Coal Gasification Plants

## Why in News?

The Ministry of Coal has prepared a **National Mission document to achieve 100 MT (Million Tonnes) Coal Gasification by 2030.**

## What is Coal Gasification?

- **Process:** Coal gasification is a process in which **coal is partially oxidised with air, oxygen, steam or carbon dioxide to form a fuel gas.**
  - This gas is then used instead of piped natural gas, methane and others for deriving energy.
  - **In-situ gasification of coal - or Underground Coal Gasification (UCG) - is the technique of converting coal into gas** while it is still in the seam and then extracting it through wells.
- **Production of Syngas:** It produces Syngas which is a **mixture consisting primarily of methane (CH<sub>4</sub>), carbon monoxide (CO), hydrogen (H<sub>2</sub>), carbon dioxide (CO<sub>2</sub>) and water vapour (H<sub>2</sub>O).**
  - Syngas can be used to **produce a wide range of fertilizers, fuels, solvent and synthetic materials.**



## What is the Significance of Coal Gasification?

- Steel companies typically use coking coal in their manufacturing process. Most of the coking coal is imported and is expensive. To **cut costs, plants can use syngas**, which comes from coal gasification plants in the place of coking coal.
- It is primarily **used for electricity generation**, to produce chemical feedstocks.
- The **hydrogen obtained from coal gasification can be used for various purposes** such as making ammonia, powering a [Hydrogen Economy](#).
- India's hydrogen demand is likely to increase to **11.7 million tonnes by 2030 from 6.7 million tonnes per year as of now**. Refineries and fertiliser plants are the largest consumers of hydrogen now, which is being produced from natural gas. It can be produced through coal in the processes during coal gasification.

## What are the Concerns associated with Coal Gasification Plants?

- **Environmental Perspective:** Coal gasification **actually produces more carbon dioxide than a conventional** coal-powered thermal power plant.
  - According to CSE estimates, one unit of electricity generated by burning gasified coal generates 2.5 times more carbon dioxide than what would result when burning the coal directly.
- **Efficiency Perspective:** The syngas process converts a relatively high-quality energy source (coal) to a lower quality state (gas) and consumes a lot of energy in doing so.
  - Thus, the efficiency of conversion is also low.

## What is the Hydrogen Economy?

- It is an economy that relies on hydrogen as the commercial fuel that would deliver a substantial fraction of a nation's energy and services.
- Hydrogen is a zero-carbon fuel and is considered an alternative to fuel and a key source of clean energy.
- It can be produced from renewable sources of energy such as solar and wind.
- It is an envisioned future where hydrogen is used as fuel for vehicles, energy storage and long-distance transport of energy.
- The different pathways to use hydrogen economy includes hydrogen production, storage, transport and utilization.
  - In 1970, the term 'Hydrogen Economy' was coined by John Bockris.
  - He mentioned that a hydrogen economy can replace the current hydrocarbon-based economy, leading to a cleaner environment.

## Way Forward

- Companies need to adopt new technologies and build digital infrastructure to support the current and future requirements.
- There is a need to ensure **optimal use of technology** in the sector.

[Source: PIB](#)

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## Draft National Data Governance Framework Policy

**For Prelims:** Data Privacy, National Data Governance Framework Policy, Data Protection

**For Mains:** National Data Governance Framework Policy, Issues related to Data Privacy and Data protection, IPR issues

## Why in News?

Recently, the Ministry of Electronics and Information Technology (MeitY) released a revised Draft National Data Governance Framework Policy.

## What is the Draft National Data Governance Framework Policy?

- **Revised Draft:** The new draft, 'National Data Governance Framework Policy', is a replacement of the now scrapped '[India Data accessibility and Use policy](#)'.
- **Objective:** The objective of the policy is **to modernise the government's data collection, with an aim to improve governance and to enable an [Artificial Intelligence \(AI\)](#) and data-led research and start up ecosystem** in the country.
- **Provisions:**
  - **Indian Datasets programme:** It calls for the creation of an India Datasets programme, which **will consist of non-personal and anonymised datasets from Central government entities** that have collected data from Indian citizens or those in India. Private companies will be "encouraged" to share such data.
    - The non-personal data housed within this programme **would be accessible to start ups and Indian researchers.**
    - Non-personal data is any set of data which does not contain personally identifiable information. This in essence means that no individual or living person can be identified by looking at such data.
    - The push to harness non-personal data was **first proposed by a government committee headed by Infosys co-founder Kris Gopalakrishnan**, which was set up to unlock the economic value of such data and also address concerns arising out of it.
  - **India Data Management Office (IDMO):** The draft also calls for **creation of an India Data Management Office (IDMO)**, which will be in charge of designing and managing the India Datasets platform.
    - The IDMO will prescribe rules and standards, including **anonymization standards** for all entities (government and private).
    - For purposes of safety and trust, any non-personal data sharing by any entity can be only via platforms designated and authorised by IDMO.
  - **No Selling of Data:** The most significant change in this new draft is the omission of the most contentious provision in the old draft — selling data collected at the Central level in the open market.
- **Application:** Once finalized, the policy will be applicable to all Central government departments along with all non-personal datasets and related standards and rules governing its access by start-ups and researchers.
  - State governments will be "encouraged" to adopt the provisions of the policy.

## What is the India Data Accessibility and Use Policy?

- The old draft — 'India Data Accessibility and Use Policy' had proposed that data collected by the Centre that has "undergone value addition" can be sold in the open market for an "appropriate price".
  - It faced widespread criticism with questions being raised about the government collecting data to monetise it in the **absence of a [data protection law in India](#)**.

## What are the Challenges of the New Draft?

- The composition of the IDMO and the process have not been made clear in the new draft policy.
- Experts also said that private companies may **not voluntarily share non-personal data.**
  - There may be trade and intellectual property issues.

[Source: IE](#)

## Compliance Deadline for Category-C Coal Plants

**For Prelims:** Coal-plant Categories, Flue Gas Desulfurisation, Central Pollution Control Board

## Why in News?

The Ministry of Power (MoP) has sought a **blanket extension of 20 years again for 398 thermal Category C coal power plants to comply with the emission norms.**

- The **Union Ministry of Environment, Forest and Climate Change (MoEF&CC)** set-up the **original deadline of 2017** for the units accounting for 78% coal-fired thermal power capacity of the nation. In 2021, this **deadline was revised to 2024.**
- Currently, just **5% capacity in Category-C plants complies with the emission norms.**

## What are the Reasons for the Extension?

- **Background:**
  - India had **initially set a 2017 deadline for thermal powerplants to install Flue Gas Desulphurization (FGD) units** that cut emissions of sulphur dioxides.
  - In 2021, the **Ministry of Power requested the Environment Ministry** to extend the deadline for meeting emission norms for all thermal plants from 2022 to 2024, citing delay due to various reasons, including the coronavirus pandemic and import restrictions.
  - In April 2021, the Environment Ministry **extended timelines for coal-based power plants to comply with emission norms by three to five years.**
    - The amended norms stagger the timeline for compliance based on location of a power plant.
    - All the thermal power plants were categorised into three groups- Category A, B and C.
- **Emissions from Coal-fired Power Plants:**
  - Thermal power companies, which produce three-fourths of the country's electricity, account for some **80% of its industrial emissions of particulate matter, sulphur and nitrous-oxides, which cause lung diseases, acid rain and smog.**
  - These are also responsible for **70% of the total freshwater withdrawal by all industries.**
- **Reasons for Extension:**
  - Phased manufacturing programme for **Flue Gas Desulfurisation (FGD)** to encourage **'Atmanirbhar Bharat'**.
    - **FGD** is the process of **elimination of sulphur-dioxide viz. SO<sub>2</sub>** from exhaust flue gases produced due to thermal processing, treatment, and combustion furnaces, boilers, and other industrial processes.
  - **High cost of FGD due to demand-supply gap** and escalated prices of FGD to Rs 1.14 crore from 0.39 crore per unit of generation.
  - The planning, tendering and implementation of FGD was **disrupted on account of the Covid-19 pandemic.**
  - Further, there exist **import constraints for the components of FGD like absorber lining and borosilicates** owing to the geopolitical conditions.

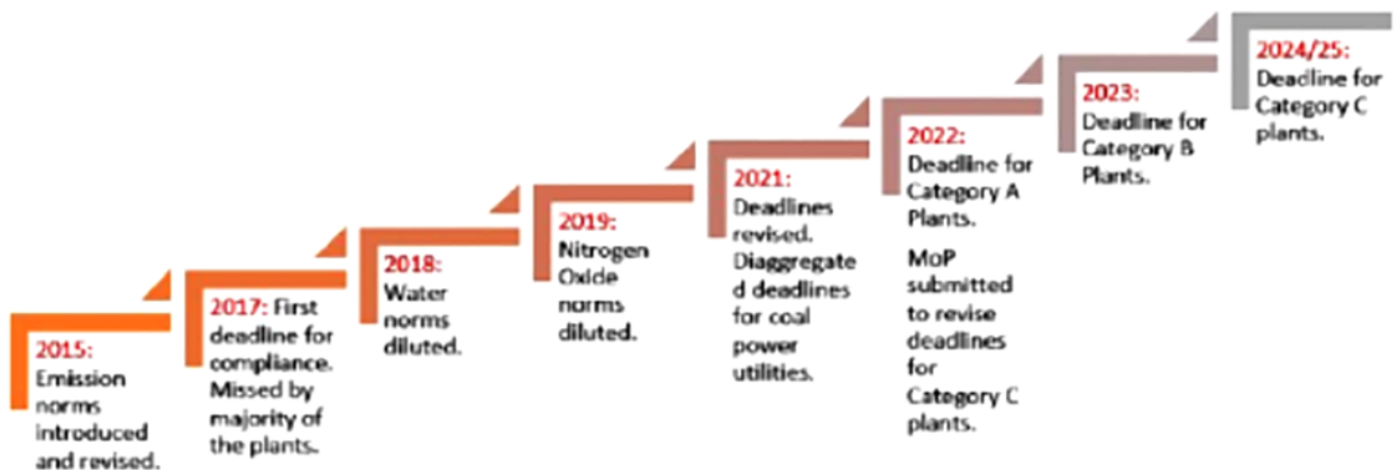
## What are the Different Categories of Coal Plants?

- Based on their aerial distance from the million-plus population cities, critically polluted areas, non-attainment cities, and Delhi-National Capital Region region, coal plants are categorized into **Category-A, Category-B and Category-C plants.**
  - **Category-A:**
    - The power plants **within the radius of 10 km of the National Capital Region (NCR) or cities having million-plus population** have to meet the **December 2022 deadline.**
    - As per the list prepared by the **Central Pollution Control Board (CPCB)**, there are **79 such coal-based power plants.**



- **Category-B and -C:**
  - The power plants **within the radius of 10 km of critically polluted areas or non-attainment cities** have to meet the **December 2023 deadline**. There are **68 Category-B plants**.
  - The **remaining plants comprising 75% of total** fall under **Category-C** those were expected to meet the December 2024 deadline. There are **449 Category-C plants**.
- The **2021 amendment** for the first time introduced a **penalty mechanism**. The **maximum fine** upon deadline breach for **non-retiring plants in Category-A is 20 paisa per unit, 15 paisa per unit for plants in Category-B, and 10 paisa per unit for those in Category-C**. The penalty for **retiring plants** is set at **20 paisa per unit**.

## Chain of events for implementation



## What is the compliance status of Category-A and Category-B plants?

- Around half of the **Category-A plants (54%) may not comply with the December 2022 deadline**. Till date, just **13%** of plants have **met the emission norms**.
- **Only 8% Category-B plants claim to be compliant and 30% are likely to meet the deadline**. **61%** are expected to **miss the deadline**.

## Way Forward

- **Safeguarding the interest of the environment** must be on the priority and the **polluters and continuous violators shouldn't be favoured**.
- **New technologies such as like [Coal gasification](#), [Coal beneficiation](#)** must be readily employed to make the power plants more efficient and compatible with the environment.
- Also, there is a **need to focus on renewable energy** more in order to be a game changer in the Indian energy transition space.

## UPSC Civil Services Examination, Previous Year Question

**Q. How is the National Green Tribunal (NGT) different from the Central Pollution Control Board (CPCB)? (2018)**

1. The NGT has been established by an Act whereas the CPCB has been created by an executive order of the Government.
2. The NGT provides environmental justice and helps reduce the burden of litigation in the higher

courts whereas the CPCB promotes cleanliness of streams and wells, and aims to improve the quality of air in the country.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (b)**

**Exp:**

- **Central Pollution Control Board (CPCB)** is a **statutory organisation** which was constituted in **September, 1974** under the **Water (Prevention and Control of Pollution) Act, 1974**. It was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981**. [National Green Tribunal \(NGT\)](#) is a **specialised body set up** under the **National Green Tribunal Act (2010)**. Hence, **statement 1 is not correct**.
- The **functions of CPCB** are:
  - **Monitoring the water quality** by promoting the cleanliness of streams and wells across different areas of the States through prevention, control and abatement of water pollution.
  - **Monitoring the air quality** by improving air quality through prevention, control and abatement of air pollution in the country.
- **NGT** provides for **effective and expeditious disposal of cases relating to environmental protection** and conservation of forests and other natural resources. Hence, **statement 2 is correct**.

**Source: DTE**

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## Surrogacy

**For Prelims:** Assisted Reproductive Technology, Altruistic and Commercial Surrogacy

**For Mains:** Surrogacy, Legal Provisions and Shortcomings, Issues related to Women, Gender

## Why in News?

Recently, a petition was filed before Delhi High Court, challenging the exclusion of a single man and a woman having a child from surrogacy and demanded the decriminalization of commercial surrogacy.

- The petitioners have **challenged their exclusion from availing surrogacy under the Assisted Reproductive Technology (Regulation) Act, 2021** and **Surrogacy (Regulation) Act, 2021**.
- The Petitioner argued that the personal decision of a single person about the birth of a baby through surrogacy, i.e., the **right of reproductive autonomy is a facet of the right to privacy** guaranteed under [Article 21 of the Constitution](#).
  - Thus, the **right of privacy of every citizen or person to be free from unwarranted**

**governmental intrusion** into matters fundamentally affecting a decision to bear or beget a child through surrogacy cannot be taken away.

## What is the Surrogacy (Regulation) Act, 2021?

### ▪ Provisions:

- Under the Surrogacy (Regulation) Act, 2021, a woman who is a widow or a divorcee between the age of 35 to 45 years or a couple, **defined as a legally married woman and man, can avail of surrogacy** if they have a medical condition necessitating this option.
- It also **bans commercial surrogacy, which is punishable with a jail term of 10 years and a fine of up to Rs 10 lakhs.**
- The **law allows only altruistic surrogacy** where no money exchanges hands and where a surrogate mother is genetically related to those seeking a child.

### ▪ Challenges:

- **Exploitation of the Surrogate and the Child:**
  - One could argue that the state must stop the exploitation of poor women under surrogacy and protect the child's right to be born. However, the **current Act fails to balance these two interests.**
- **Reinforces Patriarchal Norms:**
  - The Act reinforces traditional patriarchal norms of our society that attributes **no economic value to women's work** and, directly affecting the fundamental rights of the women to reproduce under Article 21 of the constitution.
- **Denies Legitimate income to Surrogates:**
  - Banning commercial surrogacy also **denies a legitimate source of income of the surrogates**, further **limiting the number of women willingly to surrogate.**
  - Overall, this step indirectly **denies children to the couples choosing to embrace parenthood.**
- **Emotional Complications:**
  - In altruistic surrogacy, a friend or relative as a surrogate mother may lead to **emotional complications not only for the intending parents but also for the surrogate child as there is great deal of risking the relationship in the course of surrogacy period** and post birth.
  - Altruistic surrogacy also **limits the option of the intending couple in choosing a surrogate mother** as very limited relatives will be ready to undergo the process.
- **No Third-Party Involvement:**
  - In an altruistic surrogacy, there is no third-party involvement.
  - A third-party involvement **ensures that the intended couple will bear and support the medical and other miscellaneous expenses** during the surrogacy process.
  - Overall, a third party **helps both the intended couple and the surrogate mother navigate through the complex process**, which may not be possible in the case of altruistic surrogacy.

## What is Surrogacy?

### ▪ About:

- Surrogacy is an arrangement in which a woman (the surrogate) agrees to carry and give birth to a child on behalf of another person or couple (the intended parent/s).
- A surrogate, sometimes also called a gestational carrier, is a woman who conceives, carries and gives birth to a child for another person or couple (intended parent/s).

### ▪ Altruistic surrogacy:

- It involves no monetary compensation to the surrogate mother other than the medical expenses and insurance coverage during the pregnancy.

### ▪ Commercial surrogacy:

- It includes surrogacy or its related procedures undertaken for a monetary benefit or reward (in cash or kind) exceeding the basic medical expenses and insurance coverage.

## What is Assisted Reproductive Technology?

### ▪ About:

- ART is used to treat infertility. It includes **fertility treatments that handle both a woman's egg and a man's sperm**. It works by removing eggs from a woman's body and mixing them with sperm to make embryos. The embryos are then put back in the woman's body.
- **In Vitro fertilization (IVF)** is the most common and effective type of ART.
- ART procedures **sometimes use donor eggs, donor sperm, or previously frozen embryos**. It may also involve a surrogate carrier.

### ▪ Legal Provisions:

- The ART (Assisted Reproductive Technology Act) Regulation 2021 provides **a system for the implementation of the law on surrogacy by setting up of the National Assisted Reproductive Technology and Surrogacy Board**.
- The Act aims **at the regulation and supervision of ART clinics and assisted reproductive technology banks**, prevention of misuse, and safe and ethical practice of ART services.

### ▪ Shortcomings:

- **Exclusion of Unmarried and Hetrosexual Couples:**
  - The Act excludes unmarried men, divorced men, widowed men, unmarried yet cohabiting heterosexual couples, trans persons and homosexual couples (whether married or cohabiting) from availing ART services.
  - This exclusion is relevant as the Surrogacy Act also excludes above said persons from taking recourse to surrogacy as a method of reproduction.
- **Reduces the Reproductive Choices:**
  - The Act is also limited to those commissioning couples who are infertile - those who have been unable to conceive after one year of unprotected coitus. Thus, it is limited in its application and significantly reduces the reproductive choices of those excluded.
- **Unregulated Prices:**
  - The prices of the services are not regulated; this can certainly be remedied with simple directives.

## Way Forward

As India is one of the major hubs of these practices, the Act is certainly a step in the right direction. There, however, needs to be a dynamic oversight to ensure that the law keeps up with rapidly evolving technology, demands of morality and societal changes.

## UPSC Civil Services Examination, Previous Year Question

**Q. In the context of recent advances in human reproductive technology, "Pronuclear Transfer" is used for (2020)**

- (a) fertilization of egg in vitro by the donor sperm
- (b) genetic modification of sperm producing cells
- (c) development of stem cells into functional embryos
- (d) prevention of mitochondrial diseases in offspring

**Ans: (d)**

**Exp:**

- Pronuclear transfer involves the transfer of pronuclei from one zygote to another. This technique first requires fertilisation of healthy donated eggs (provided by the mitochondrial donor) with the intended male parent sperm. Simultaneously, the intending mother's affected oocytes are

fertilised with the intending father's sperm.

- By using a technique, called 'Maternal Spindle transfer', the maternal DNA is put into the egg of a donor woman, which is then fertilized using the father's sperm. The procedure was developed to help existing In-vitro-Fertilization (IVF) treatments in which mothers have mitochondrial diseases.
- Mutations in maternal DNA are a cause of mitochondrial disease, a heterogeneous group of diseases that can lead to premature death, sometimes in infancy or childhood. Most mitochondrial diseases lack specific treatments, and women who carry the causative mutations are at high risk of transmitting the diseases to their offspring. Therefore, option (d) is the correct answer.

[Source: TH](#)

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## First Lavender Festival

**For Prelims:** Purple Revolution, Aroma Mission

**For Mains:** Lavender Cultivation and its significance, Agricultural Pricing, Agricultural Resources

### Why in News?

Recently, **India's First Lavender festival was inaugurated in Jammu's Baderwah.**

- Lavender cultivation has generated employment for about 5,000 farmers and young entrepreneurs in Jammu & Kashmir remote areas. Over 1,000 farming families cultivating it on 200 acres.

### What is the Lavender Revolution?

- **About:**
  - The Purple or Lavender Revolution was **launched in 2016 by the Union Ministry of Science & Technology** through the **Council of Scientific & Industrial Research (CSIR)** Aroma Mission.
  - Lavender cultivation is practised in almost all the 20 districts of Jammu & Kashmir.
  - Under the mission, **first-time farmers were given free lavender saplings**, while those who had cultivated lavender before were **charged Rs. 5-6 per sapling**.
- **Aim:**
  - To support domestic aromatic crop based agro economy by moving from imported aromatic oils to homegrown varieties.
- **Products:**
  - Main product is Lavender oil which sells for at least Rs. 10,000 per litre.
  - Lavender water, which separates from lavender oil, is used to make incense sticks.
  - **Hydrosol**, which is formed after distillation from the flowers, is used to make soaps and room fresheners.
- **Significance:**
  - It is in sync with the government policy of **doubling farm incomes** by 2022.
  - It will help in providing means of livelihood to budding farmers and agri-entrepreneurs and give a boost to **Start-Up India campaign** and promote a spirit of entrepreneurship in the region.
    - Over 500 youth had taken benefit from the purple revolution and augmented their income many-fold.

## What is an Aroma Mission?

### ▪ About:

- The CSIR Aroma Mission is **envisaged to bring transformative change in the aroma sector** through desired interventions in the areas of agriculture, processing and product development for fuelling the growth of aroma industry and rural employment.
- The mission will **promote the cultivation of aromatic crops for essential oils** that are in great demand by the aroma industry.
- It is expected to enable Indian farmers and the aroma industry to become global leaders in the production and export of some other essential oils in the pattern of menthol mint.
- It aims to provide substantial benefits to the farmers in achieving higher profits, utilisation of waste lands and protection of their crops from wild and grazing animals.

### ▪ Aroma Mission Phase-I and II:

- During Phase-I, CSIR helped cultivate 6000 hectares of land and covered 46 Aspirational districts across the country. Further, more than 44,000 people were trained.
- In February 2021, CSIR launched Phase-II of Aroma Mission in which it is proposed to engage over 45,000 skilled human resources and will benefit more than 75,000 farming families across the country.

### ▪ Nodal Agencies:

- The nodal laboratory is CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow.

### ▪ Intended Outcomes:

- Bring about 5500 ha of additional area under captive cultivation of aromatic cash crops particularly targeting rain-fed /degraded land across the country.
- Provide technical and infrastructural support for distillation and value-addition to farmers/growers all over the country.
- Enabling effective buy-back mechanisms to assure remunerative prices to the farmers/growers.
- Value-addition to essential oils and aroma ingredients for their integration in global trade and economy.

[Source: PIB](#)

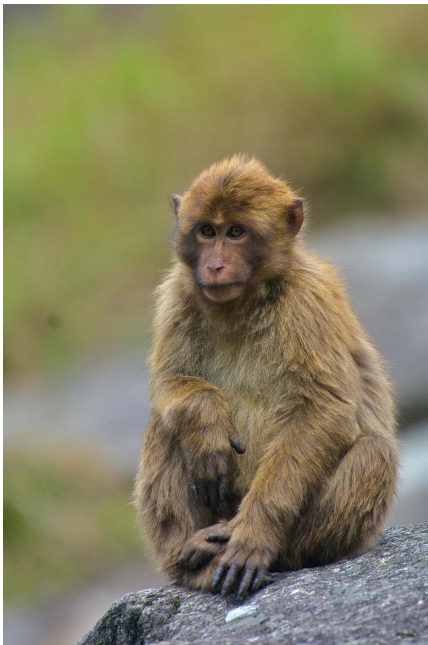
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## Sela Macaque

### Why in News?

A new species of old-world monkey recorded from Arunachal Pradesh has been named after Sela Pass, which is a strategic mountain pass at 13,700 ft above sea level, and the New Species has been named Sela Macaque.

- It was identified and analysed by a team of experts from the **Zoological Survey of India (ZSI) and the University of Calcutta.**
- Sela is situated between **Dirang and Tawang towns** in western Arunachal Pradesh.



## What are the Findings?

- The phylogenetic analysis revealed that the **Sela macaque was geographically separated from the Arunachal macaque (*Macaca munzala*)** of Tawang district by Sela.
  - Phylogenetics relate to the evolutionary development and diversification of a species or group of organisms.
- It was found to be **genetically different from the other species of monkeys reported from this region.**
- The study describes the **Sela macaque as genetically closer to the Arunachal macaque.**
- The two have some similar physical characteristics such as **heavy-build shape and long dorsal body hair.** Both species have troops that either avoid proximity to humans or are used to human presence.
- There are some **distinct morphological traits to differentiate the two species.** While the Sela macaque has a pale face and brown coat, the Arunachal macaque has a dark face and dark brown coat.
- Sela macaque has a **tail longer than the Tibetan macaque, Assamese macaque, Arunachal macaque** and the white-cheeked macaque but **shorter than the bonnet macaque and toque macaque.**
- Sela macaque **belongs to the sinica species-group of Macaca,** but it **differs from all other members of this group through attributes such as brown collar hair** and muzzle, thick brown hair around the neck and the absence of chin whiskers.
- Sela macaque is a **major cause of crop loss in the West Kameng district of the State.**

## What is the Zoological Survey of India?

- The Zoological Survey of India (ZSI), **a subordinate organization of the Ministry of Environment and Forests** was established in 1916.
- It is a national **centre for faunistic survey and exploration of the resources leading to the advancement of knowledge** on the exceptionally rich faunal diversity of the country.
- It has its headquarters at Kolkata and 16 regional stations located in different geographic locations of the country.

[Source: TH](#)

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