

Forum IAS

7 PM COMPILATION

1st to 15th November, 2023

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
- ❖ Wide use of charts, diagrams and info graphics
- ❖ Best-in class coverage, critically acclaimed by aspirants
- ❖ Out of the box thinking for value edition
- ❖ Best cost-benefit ratio according to successful aspirants

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70 Hours Work Week- Analysis- Explained Pointwise

Introduction

Recently, Infosys Founder **Narayan Murthy** suggested '70 hours work week' to improve India's labour productivity and competitiveness. He emphasised the need to improve India's labour productivity, citing Germany and Japan as examples. This idea of long working hours as a measure to improve the country's work productivity has drawn both support and criticism.

What is Productivity and what are its types?

Productivity- Productivity measures how efficiently inputs like **labour** and **capital** are used to produce outputs such as goods and services.

Types of Productivity

Labour/Work Productivity	(1) Measures the output produced per hour of work. For example for a GDP of \$1 trillion with its people working 20 billion hours, the labour productivity is \$50 per hour. (2) It is directly linked to increased wages, better living standards, and consumer's purchasing power.
Capital Productivity	(1) Measures the output produced by using physical assets like machinery, buildings and equipments. (2) It indicates how efficiently investments in physical assets are used, impacting profitability and competitiveness.
Total Factor Productivity	(1) Measures the output produced by advancements in innovation and technology. (2) It reflects efficiency improvements, technological progress, and innovation in an economy.

What is the status of India's labour productivity and working hours ?

Indian Labour productivity status as per the ILO Data

India	India's hourly output stands at \$8.47 . Indians work an average of nearly 48 hours per week .
France	France's hourly output stands at \$58 . Average workweek is around 30 hours per week .

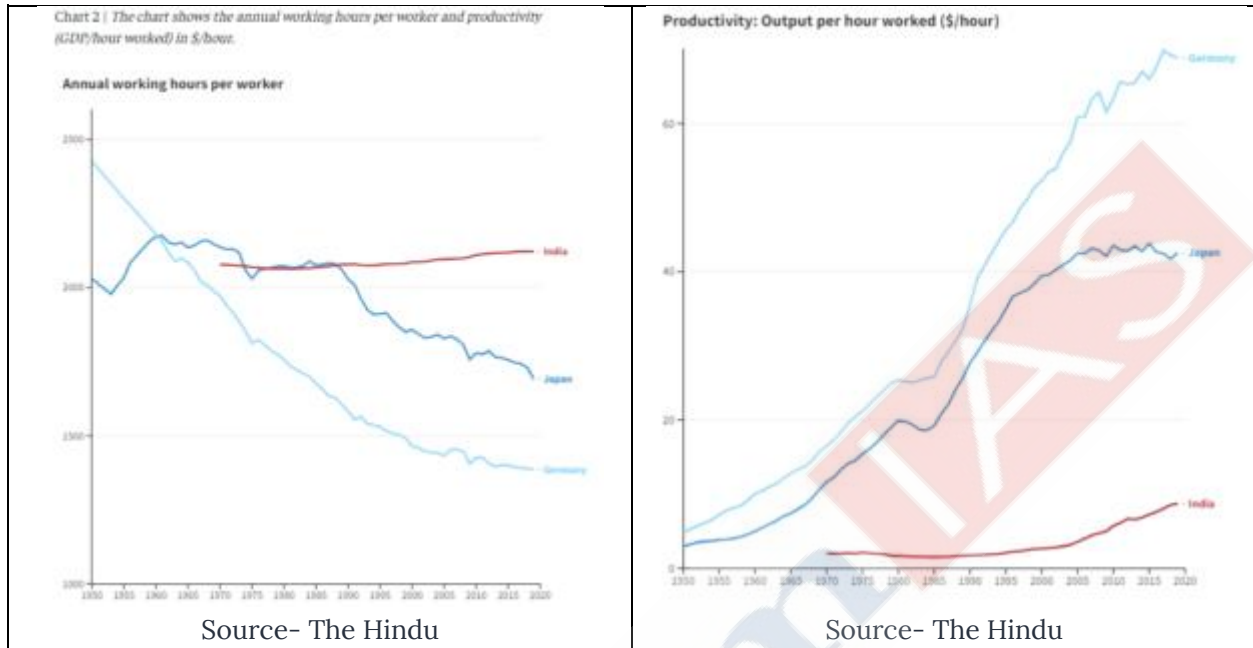
Young India's working hours

- (1) Time Use Survey in India 2019 data shows that young Indians aged 15-29 currently work around **7.2 hours a day in rural areas** and **8.5 hours a day in urban areas**.
- (2) A State-wise comparison of the time spent on work in urban areas is higher than in rural areas. Uttarakhand ranks first, with young people from the State working for an average of 9.6 hours a day.

Mr. Murthy's rationale for long working hours taking the productivity increase of Japan and Germany by long working hours

Germany and Japan after the second world war encouraged their workforce to put in extra hours of work per day to boost the economic productivity. The average working hours was between **2,200 to**

2,400 hours per year, which came down to 8.3 to 9 hours of work per day, adhering to a five-day work week without holidays.



However, 70 hours work week would translate to 14 hours per weekday. This would be even more than what Japan and Germany reached in the post world war era.

What are the arguments in favour of '70 hours work week'?

1. Increased Productivity- Advocates argue that a longer workweek could potentially result in higher productivity due to more time spent on tasks and projects. Ex- Japan and Germany productivity push due to longer working hours.



Figure 1. Source- The Hindu

2. Higher Economic Growth- It might boost economic growth as more work hours could contribute to increased production and innovation. It can help India reach the goal of \$5 trillion economy.

3. Increased Global Competitiveness- In a globalized world, longer work hours might help Indian professionals remain competitive in the international

job market. Ex- Financial Sector in India can match the global standards which work round the clock.

4. Potential for higher tax revenues for the government- Increased economic activity and higher incomes due to longer working hours result in greater tax revenues. This can be used for public services and infrastructure development.

5. Opportunity for Skill Development- Individuals can achieve mastery in one's chosen field by investing extra number of hours at work. For Ex- Out of the 70 hours, one can assign 40 hours to his/her professional responsibilities and set aside 30 hours for personal skill enhancement.

6. Leveraging the Demographic Dividend for Nation Building- India needs a dedicated labour force where young individuals are willing to put in 70 hours of work per week for the service of nation-building.

What are the Arguments against the '70 hours work week'?

1. Decline in productivity with Long Working Hours- Research shows that productivity declines significantly after 50 hours of work per week and drops further after 55 hours. Germany and Japan further increased productivity by reducing working hours to 1,400-1,600 hours a year. Ex- World's most productive countries have the least work week days.

Most Productive Countries, 2015

Rank	Country	GDP per hour worked	Employed Population	GDP (USD)	Average work week (hrs)
1	Luxembourg	\$ 93.4	405,600	\$57b	29
2	Ireland	\$ 87.3	1,989,400	\$302b	33.5
3	Norway	\$ 81.3	2,753,000	\$318b	27.3
4	Belgium	\$ 69.7	4,601,200	\$498b	29.8
5	United States	\$ 68.3	151,000,000	\$18,037b	33.6
6	Denmark	\$ 67.6	2,829,000	\$270b	27.2
7	France	\$ 65.6	27,523,000	\$2,648b	28.2
8	Germany	\$ 65.5	43,057,000	\$3,857b	26.3
9	Netherlands	\$ 65.4	8,792,000	\$818b	27.4

Figure 2. Source- TIME

2. Burnout and Mental Health- Workers who put in 70 hours a week are more prone to experience burnout, higher levels of stress and mental health problems. Extended work hours may negatively impact an individual's health and work-life equilibrium.

3. Increased healthcare costs due to stress-related issues- Longer hours can result in higher healthcare costs, as stress-related health problems become more prevalent.

4. Negative Effect on Family Life- Long work hours can make it more difficult to meet personal and family obligations, strain relationships within the family and disturb the work-life balance.

5. Diminished Creativity and Innovation- Overworked People frequently exhibit less creativity and innovation. Tiredness can hinder one's capacity for original thought and problem-solving.

6. Work Quality- Longer hours do not always translate into better work. Tired employees are more prone to make mistakes and do subpar work.

7. Exacerbation of gender Inequalities- Extended work hours may have a disproportionate impact on women, who often **shoulder greater caring and home obligations**, hence exacerbating gender inequalities.

8. Danger of Exploitation- Employers may take advantage of a culture of extended work hours, which could result in unpaid overtime, subpar working conditions, and **abuses of workers' rights**.

9. Negative Impact on the Community and Society- Long work hours can reduce participation in the community and society, which can have a negative impact on volunteering work and social cohesiveness.

Read More- [On Labour Productivity in India- NRN Gets It Wrong](#)

What should be the way forward for increasing productivity without increasing the work hours?

1. Technological Adoption- We must Invest in modern technologies and automation to streamline processes and improve productivity.

2. Skills Enhancement- Skill India Mission must be implemented properly to provide skill training and education to workers.

3. Upgradation of Infrastructure- We must develop better transportation infrastructure to reduce commuting time and increase accessibility to workplaces.

4. Fostering Innovation- We must encourage research and development (R&D) activities to drive innovation, leading to improved products and services and increased productivity.

Conclusion

Finally, while N.R. Narayana Murthy's proposal for a 70-hour workweek for young Indians aims to increase productivity, it should be carefully evaluated in light of the potential negative effects on work quality, burnout, mental health problems, and work-life balance. **Writing good employment rules** requires striking a balance between the needs of the job and the welfare and personal development of the employee.

Reads More- [The Times of India](#)

UPSC Syllabus Topic: GS Paper 3 Indian Economy – Employment and labour productivity.

Road Accidents in India- Explained Pointwise

Introduction

The Annual Report on '**Road Accidents in India-2022**' has been published by the Ministry of Road Transport and Highways. The report highlights that there are **53 road accidents and 19 deaths due to these road accidents per hour** in India.

Brakes off

Road accident fatalities have increased over the past decade, as per the Road Accidents in India 2022 report



Year	No. of road accidents	Fatalities	Severity*
2018	4.7 lakh	1.57 lakh	32.4
2019	4.56 lakh	1.58 lakh	34.8
2020	3.72 lakh	1.38 lakh	37.2
2021	4.12 lakh	1.53 lakh	37.3
2022	4.61 lakh	1.68 lakh	36.5

*Number of persons killed per 100 accidents

Figure 3. Source- The Hindu

What are the key Highlights of Road Accidents in India report?

Report Preparation

Methodology- This report is based on the data/information received from police departments of States/UTs on calendar year basis in standardized formats as provided by the **United Nations Economic and Social Commission for Asia and**

the Pacific (UNESCAP) under the **Asia Pacific Road Accident Data (APRAD)** base project.

Key Highlights-The key highlights of the report are summarised below-

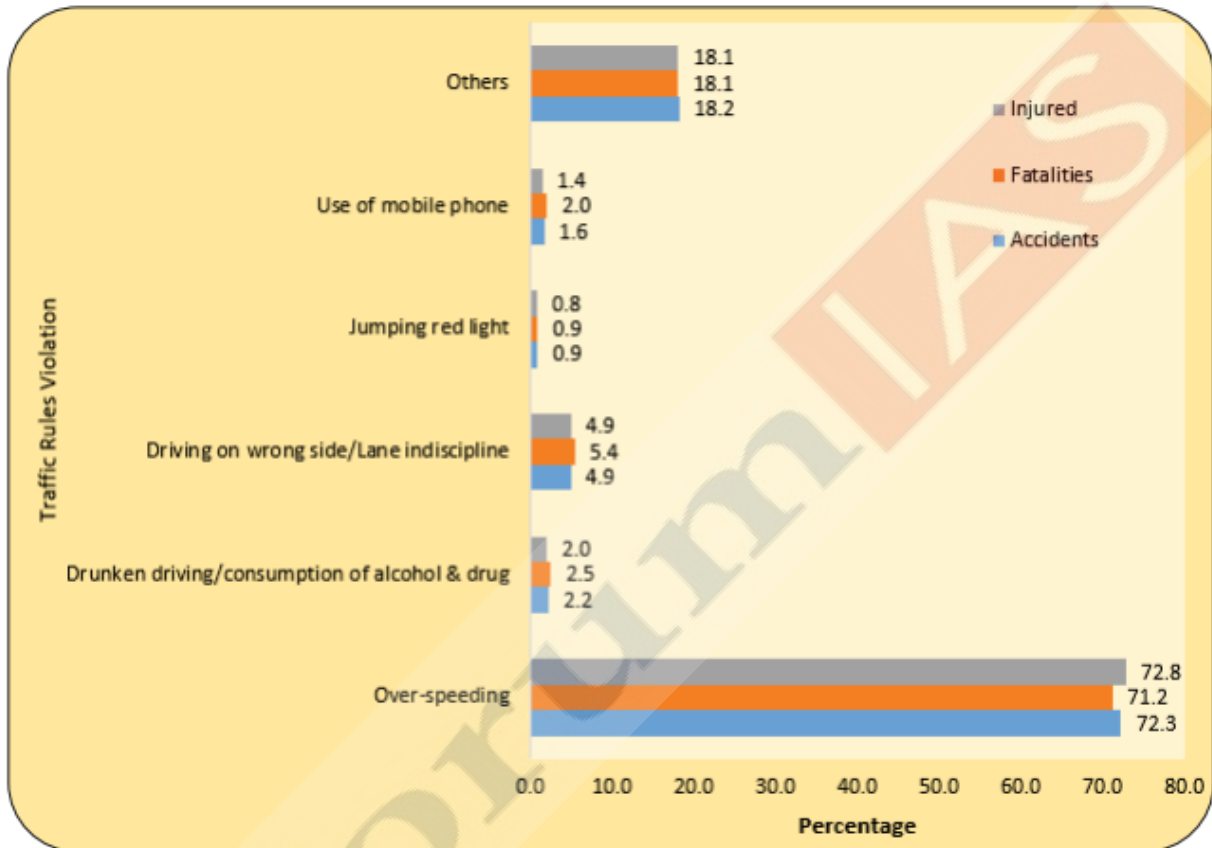
Increase in road accidents over the years	(1) There were a total 4,61,312 road accidents across the country in 2022, which claimed as many as 1,68,491 lives . (2) The number of road accidents in 2022 increased by 11.9% and deaths rose by 9.4% as compared to 2021.
Increase in severity of accidents (Severity is the number of persons killed per 100 accidents)	(1)Severity of road crashes has increased over the past decade from 28.2 in 2012 to 36.5 in 2022. (2) There has been a consistent increase in the severity of cases every year even during the COVID times.
Maximum deaths on the National Highways (NH) and State highways (SH)	(1) National and State highways, which account for only 4.9% of the total road network, witnessed 56.1% of all road crashes and almost 61% of all road crash fatalities in the country.
States with Maximum deaths	Uttar Pradesh registered the highest share of deaths at 13.4% . This was followed by Tamil Nadu at 10.6% and Maharashtra at 9% .
Demographic Distribution of deaths	(1) People in the 18-45 age bracket comprised 67% of the total fatalities in the road accidents. (2) Children death fatalities were around 9,528 in 2022 .

What are the reasons for the increase in Road accidents?

According to the report, the reasons for the increase in road accidents are mentioned below-

1. Human errors and Traffic Rules Violations- **Over speeding** is the major cause and it accounts for 71.2 percent of the persons killed in 2022. **Driving on the wrong side** is the second reason accounting for 5.4 per cent deaths.

Chart 3.1: Road Accidents by type of Traffic Rules Violation during 2022



Source- MoRTH

2. Faulty Road Designs- Faulty road engineering leading to **black spots**, poor designing of junctions, inadequate signage, haphazard planning of state highways and city roads are also some major factors causing road accidents.

3. Weak Vehicle Safety Standards in India- Crash tests carried out by the Global New Car Assessment Programme (NCAP) in 2014 revealed that some of India's top-selling car models **failed** the **UN (United Nations)'s frontal impact crash test**.

4. Lack of Golden Hour Treatment- Lack of rapid trauma care on highways leads to high fatalities.

5. Low awareness- Indians have very low awareness regarding the importance of safety features like **airbags, Anti lock Braking system, safety belt usage** etc.

What are the impacts of road accidents in India?

- 1. Economic Impact-** As per the World Bank report, Indian economy loses 3 to 5 percent of its GDP each year due to road accidents.
- 2. Social Impact-** **Vulnerable Road Users (VRUs)** like the male urban poor, account for more than half of all road crash deaths and serious injuries in the country. These accidents further push them into extreme poverty as they are pushed out of employment.
- 3. Gender-Specific Impact-** According to World Bank's report "**Traffic Crash Injuries and Disabilities: The Burden on Indian Society 2021**", about 50% of Indian women were severely affected by the decline in their household income after a crash.

What measures have been taken in India to reduce road accidents?

- 1. Formulation of National Road Safety Policy (NRSP), 2010-** The policy was formulated based on the recommendations of **S Sundar Committee**. Some of the important highlights are-
 - (a) Establishment of Road Safety Information Database.
 - (b) Periodical review of road design standards and Vehicle safety standards.
 - (c) Creation of **National Road Safety Council** to supervise matters related to road safety.
- 2. Establishment of District Road Safety Committees (DRSC)-** Established under the Section 215 of the Motor Vehicle Act of 1988. These have been entrusted with creation of a **district road safety plan** and an **emergency medical plan**.
- 3. Passage of Motor Vehicles (Amendment) Act 2019-** GOI has tried to enhance the road safety measures through this act.
 - (a) Creating a **National Road Safety Board** to advise the government on traffic management.
 - (b) Higher fines for traffic rule violations.
 - (c) Recalling defective vehicles which are dangerous for the environment and people.
 - (d) Creation of a '**Solatium Fund**' for victims of hit-and-run accidents.
 - (e) Punishment to the owner for violations committed by Juvenile.
 - (f) Automated testing for **driver's licence and fitness certificate (FC)**.
 - (g) Protection of **Good Samaritans** from civil and criminal liability.

Read More- **Motor Vehicles (Amendment) Act 2019**

- 4. Other technical initiatives-** Further more, other technical initiatives have been taken which are mentioned below-
 - (a) **Front and side crash tests** for new car models.
 - (b) New cars are required to have airbags fitted as standard.
 - (c) Installation of **Roadside Safety Crash barriers** and speed warning boards.
 - (d) Rectification of identified Black spots.

Some global initiatives for Road Safety

Brasilia Declaration on Road Safety (2015)- India is a signatory to the Declaration.

The countries plan to achieve Sustainable Development Goal 3.6 i.e., to halve the number of global deaths and injuries from road traffic accidents by 2030.

Decade of Action for Road Safety 2021-2030- The UN General Assembly adopted resolution “Improving global road safety” with the ambitious target of preventing at least 50% of road traffic deaths and injuries by 2030.

What measures must further be adopted to reduce road accidents in India?

1. Indian Vehicles safety features must conform to global best standards- The European Union’s General Safety Regulation which prescribes features like **advanced emergency braking technology** and **intelligent speed assistance** must be adopted in India.

2. Implementation of the important recommendations of the KS Radhakrishnan panel on Road Safety- The important ones are

- (a) Compulsory Audit on road safety by the state governments
- (b) Creating awareness among people on road safety rules, insurance policies
- (c) Providing enough compensation to victims on time.

3. Separation of lanes for different types of Vehicles- There should be separation of lanes for 2-Wheelers and heavy vehicles.

4. Strict implementation of the existing rules-The enhanced fines for traffic rules violations will also help in reduction of road accidents in India.

The approach to road safety has to be **proactive, rather than reactive**. The public has as much role to play as the Government. A concerted and focused effort from both the government and the citizens can help bring down road accidents and help save precious lives.

Read More- The Hindu, The times of India

UPSC Syllabus- Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Ethics Committee- Functions and Challenges- Explained Pointwise

Introduction

Recently, Lok Sabha Ethics Committee has initiated investigation over ‘Cash for Query’ allegations against a Member of Parliament (MP) accused of accepting bribes to ask questions in Parliament.

What is Lok Sabha Ethics Committee ?

About Lok Sabha Ethics Committee

- (1) Each of the two Houses of Parliament has an ethics committee. The ethics committee in Lok Sabha has **15 members**. The ethics committee in Rajya Sabha has **10 members**.
- (2) The members of the Lok Sabha Ethics Committee are appointed by the **Speaker for a period of one year**.

History of Evolution of Ethics Committees

1996	In 1996, Presiding Officer's Conference held in Delhi first mooted the idea of ethics panels for the two Houses (Lok Sabha and Rajya Sabha).
1997	On 4th March 1997, the Vice President (and Rajya Sabha Chairman) K R Narayanan constituted the Ethics Committee of the Rajya Sabha to oversee the moral and ethical conduct of members and examine cases of misconduct referred to it.
2000	In 2000, an ad hoc Ethics Committee of Lok Sabha was constituted by the late speaker G.M.C. Balyogi on the recommendations of the Committee of Privileges.
2015	In 2015, the Lok Sabha Ethics committee became a permanent Committee .

Functions of Lok Sabha Ethics Committees

- (1) Lok Sabha Ethics Committee **oversees the moral and ethical conduct** of the members.
- (2) Lok Sabha Ethics committee prepares a **Code of Conduct for members**, which are amended from time to time.
- (3) Lok Sabha Ethics Committee **examines every complaint relating to unethical conduct** of a member of Lok Sabha **referred to it by the Speaker** and make such recommendations as it may deem fit

Procedure for handling of complaints by the Lok Sabha Ethics committee

Complaint's Origin	<ol style="list-style-type: none"> (1) The complaint against Lok Sabha MP can be initiated by another Lok Sabha MP only. (2) However, any person can complain against any Lok Sabha MP. But this complaint can be submitted by only a Lok Sabha MP, along with evidence of the alleged misconduct, and an affidavit stating that the complaint is not "false, frivolous, or vexatious". (3) If the Lok Sabha MP himself complains, the affidavit is not needed.
Speaker's Role	<ol style="list-style-type: none"> (1) The Speaker of the Lok Sabha can refer to the Committee any complaint of unethical behaviour against an MP. (2) The Committee does not entertain complaints based only on media reports or on matters that are sub-judice.
Prima Facie Inquiry and Report presentation	<ol style="list-style-type: none"> (1) The Committee makes a Prima Facie inquiry before deciding to examine a complaint. (2) The committee makes its recommendations after evaluating the complaint. (3) The Committee presents its report to the Speaker, who asks the House if the report should be taken up for consideration. There is also a provision for a half-hour discussion on the report.

What actions can be taken by the committee

- (1) If the Ethics Committee finds merit in the complaint, it can make recommendations. The **potential punishment** it can recommend **typically involves Suspension of the MP for a specified period**.
- (2) The House, which includes all MPs, ultimately decide whether to accept the committee's recommendation and determine the nature and extent of the punishment, if any.

Previous Case of recommendation of suspension by the ethics committee “2005 Cash for query case”-

In 2005, the two Houses adopted motions to expel 10 Lok Sabha MPs and one Rajya Sabha MP who were accused of agreeing to ask questions in Parliament for money. In Rajya Sabha, the complaint was examined by the House Ethics Committee which recommended suspension. However, the motion in Lok Sabha was based on the Bansal Committee’s report, a special committee set up by the Speaker to examine the issue. The expelled MPs, demanded that the Bansal Committee’s report be sent to the Privileges Committee, so that the parliamentarians could defend themselves.

Difference between Ethics Committee and Privileges Committee

- (1) The work of the Ethics Committee and the Privileges Committee often overlap. An allegation of corruption against an MP can be sent to either body, but **usually more serious accusations go to the Privileges Committee.**
- (2) The Ethics Committee can take up **only cases** of misconduct that **involve MPs**. The privilege committee **can interrogate a non-MP also** for actions that attack the authority and dignity of the House.

What is the significance of Lok Sabha Ethics Committee ?

Advice and Guidance- The committee helps Members of Parliament **understand and abide by the code of conduct required of them** as elected officials by offering them advice and guidance on ethical issues.

Investigation and Decision-Making- In cases where unethical conduct is established, the committee can recommend appropriate action or sanctions against the erring MPs, including suspension or expulsion from the Lok Sabha. This helps in ensuring that **ethical decisions are taken by the MPs.**

‘Code of Conduct’ as a guide map for the MPs- The ‘code of conduct’ devised by the committees provides clarity to the ‘MPs in their conduct’ to uphold the **‘principle of transparency’** and **‘clarity and consistency’**.

What are the issues associated with the functioning of the Lok Sabha Ethics Committees?

- (1) **Issues with the functioning of Ethics Committee-** The term **‘unethical conduct’ has not been defined anywhere.** It is left entirely to discretion of the committee to examine a particular act of conduct as ethical or unethical.
- (2) **Evolution of Ethical Standards-** Ethical standards often evolve with time and a rigid view of these ethical standards by the Lok Sabha Ethics committee, **limits the ability of the MP to adapt to changing norms and expectations.**
- (3) **Referring the graft cases to the Ethics Committee instead of the Privileges Committee/Special committees-** Complaints of MPs accepting money for parliamentary work are usually referred to the privileges committee or special committees appointed by the House for that purpose. Ex- **Bansal Committee on the “cash for query case 2005”.** However, the present case of “cash for query” has been referred to the ethics committee. There are **chances of partisanship** in the investigation.

Read More- On cash for query case – Ethics, parliamentary conduct and the Indian MP

Conclusion

The committee's role in interpreting and applying ethical standards, while taking into account the evolving nature of ethics, is crucial to maintaining the integrity of parliamentary proceedings and the conduct of MPs. The committee can use a variety of techniques, such as **seminars and workshops**, to increase MPs' understanding of moral principles and encourage moral behaviour.

Read More- [The Indian Express](#)

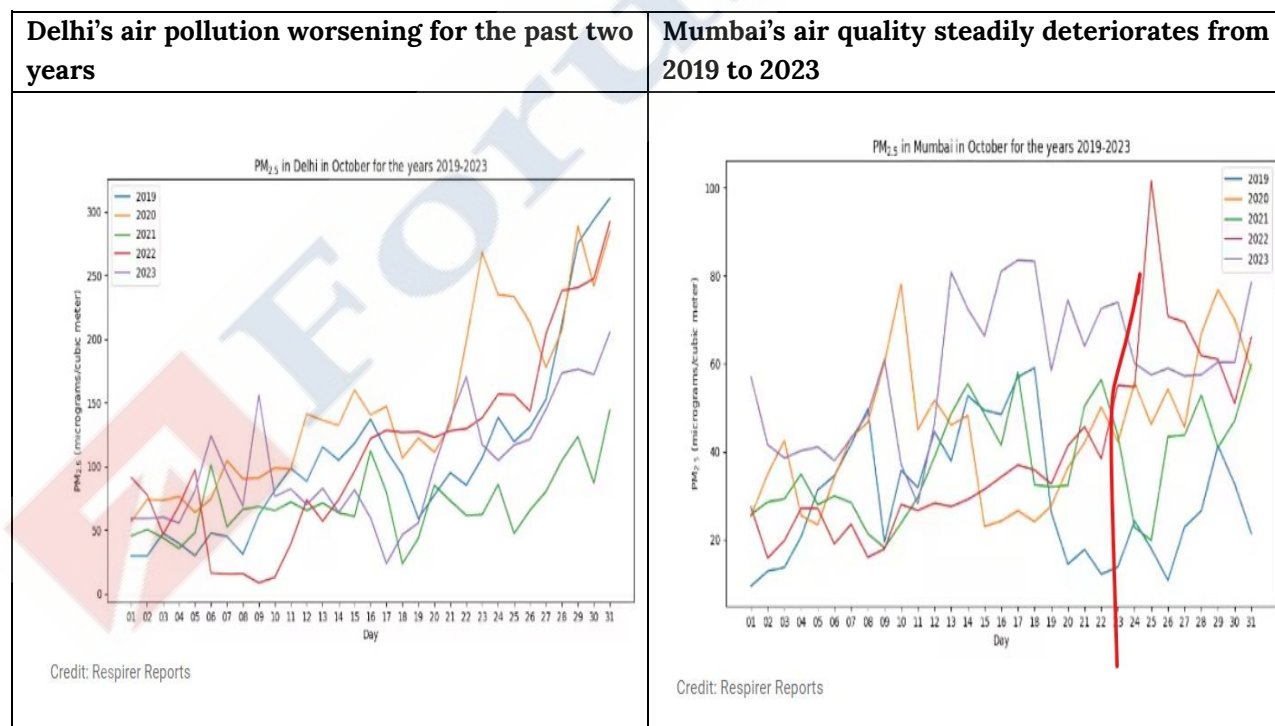
UPSC Syllabus- GS Paper 2 Indian Polity – Parliament—structure, functioning, conduct of business, powers & privileges and issues arising out of these.

Air Pollution in Delhi and Mumbai- Explained Pointwise

Introduction

Air Pollution in Delhi and Mumbai has again hit the national headlines. **Delhi's air quality** has breached the 400 AQI mark to hit the '**severe**' category and plummeted to reach 575. Before Delhi, **Mumbai in October** witnessed '**severe**' air quality.

According to the recently published 'Respirer Reports' by Respirer Living Sciences, PM 2.5 levels in both Delhi and Mumbai has been increasing in the last five years.



What is air Pollution and how is it measured in India?







Air Pollution- Air pollution is the introduction of chemicals, particulates or biological materials into the atmosphere that cause discomfort, disease or death to humans.

Measurement of Air Pollution In India

In India, air pollution is measured according to the National Air Quality Index developed by Central Pollution Control Board (CPCB) in 2014.

The measurement of air quality in the NAQI framework is based on **eight pollutants**, namely- Particulate Matter (**PM₁₀**), Particulate Matter (**PM_{2.5}**), Nitrogen Dioxide (**NO₂**), Sulphur Dioxide (**SO₂**), Carbon Monoxide (**CO**), Ozone (**O₃**), Ammonia (**NH₃**) and Lead (**Pb**).

Categorization of Air Quality under AQI:

AQI	Remark	Colour Code	Possible Health Impacts
0-50	Good		Minimal Impact
51-100	Satisfactory		Minor breathing discomfort in sensitive people
101-200	Moderate		Breathing discomfort to people with asthma and heart disease.
201-300	Poor		Breathing discomfort to most people on prolonged exposure.
301-400	Very Poor		Respiratory illness on prolonged exposure
401-500	Severe		Affects healthy people and seriously impacts those with existing diseases.

Source- CPCB

Read More- [Air Quality Standard of India](#)

What are the reasons for the rise in air pollution in Delhi and Mumbai?

Reasons for the increase in air pollution in Delhi

- (1) **Stubble Burning-** Stubble burning in Punjab, Rajasthan and Haryana emits large amounts of toxic pollutants in the atmosphere. These pollutants contain **harmful gases** like methane (CH₄), carbon monoxide (CO), volatile organic compounds (VOC) and carcinogenic polycyclic aromatic hydrocarbons.
- (2) **Reduced Wind Speed-** Low-speed winds in winters are unable to disperse these pollutants effectively. Further, Delhi lies in a **landlocked region** and does not have the geographical advantage of sea breeze to disperse the suspended pollutants.
- (3) **Effect of Northwesterly winds-** After the withdrawal of monsoons, the predominant direction of winds in northern India is northwesterly. These northwesterly winds bring the **dust from the gulf region**, northern Pakistan and Afghanistan.
- (4) **Dip in Temperatures lowers the inversion height-** With the decrease in temperature, **inversion height lowers down**, leading to concentration of pollutants in the lower atmosphere. (Inversion height is the layer beyond which pollutants cannot disperse into the upper layer of the atmosphere).
- (5) **Vehicular Pollution-** Delhi has one of the **highest number of registered private vehicles** in India. Official emissions inventories of 2018 show that vehicles emit about 40 per cent of the particulate load in the city of Delhi.
- (6) **Construction Activities and Open Waste Burning-** Pollution due to **landfill burning and construction debris** enhances the pollution levels in the Delhi NCR region.
- (7) **Firecrackers-** Firecrackers burning during Diwali further adds to the increase in air pollution levels.

Reasons for the Increase in air Pollution in Mumbai

- (1) **Delay in the sea wind reversal pattern-** The **sea wind reversal pattern** has been delayed. Hence the pollutants in the atmosphere could not be taken away to the sea. (Sea wind reversal is the alternating movement of winds from land to sea and sea to land).
- (2) **Increased temperature in Mumbai-** Due to the unusually high temperature in October, a **steep temperature gradient** developed between the city and nearby hilly regions. This resulted in winds from the hilly region areas moving towards Mumbai. These winds picked up dust from major construction projects in Navi Mumbai and surrounding areas.
- (3) **Refineries, industries and garbage-burning-** These anthropological factors have further contributed to increase in the pollution levels.

Read More- On Air Pollution in Mumbai – Climate change has made it harder to breathe in Mumbai

What are the harmful effects of air pollution?

The harmful effects of air pollution have been tabulated below-

Economic effects	(1) Leads to loss of labour productivity, GDP and per capita income levels . (The Confederation of Indian Industry estimates that air pollution costs Indian businesses \$95 billion, or 3 per cent of India's GDP every year). (Poor air amounts to about Rs 7 lakh crore of annual economic loss, which is more than a third of our annual GST collection) (2) Air pollution reduces agricultural crop yields and commercial forest yields.
Human Health Effects	(1) Air pollution leads to multiple health conditions including respiratory infections, heart disease and lung cancer . (2) As per the Global Burden of Disease comparative risk assessment for 2015, air pollution exposure contributes to approximately 1.8 million premature deaths and loss of 49 million disability adjusted life-years (DALYs) in India.
Environment	(1) Acid Rain - Damages crops, natural vegetation, soil chemistry and leads to damage to ancient monuments (Taj Mahal Yellowing). (2) Eutrophication of water bodies - Increases nitrogen intake of freshwater bodies leading to Eutrophication.

What Govt initiatives have been taken to reduce air pollution in Delhi?

- (1) **Crop Residue Management Scheme**- Crop Residue Management (CRM) scheme which provides subsidy to farmers for buying 'Turbo Happy Seeder', 'Super SMS attachment', 'rotavators' and 'superseeder'.
- (2) **Commission for Air Quality Management (CAQM)**- CAQM is a statutory body formed under the Commission for Air Quality Management in National Capital Region and Adjoining Areas, Act 2021. CAQM has provided a framework to tackle the problem of air pollution due to stubble burning.
- (3) **Initiatives to reduce Vehicular Pollution**- The **shift from BS-IV to BS-VI**, push for **Electric Vehicles (EVs)**, **Odd-even Policy** have all been implemented to reduce Vehicular pollution.
- (4) **Graded Response Action Plan (GRAP)**- GRAP measures like shutting down thermal power plants and a ban on construction activities are implemented to curb air pollution.

What should be the way ahead to curb air pollution in Delhi and Mumbai?

A start has been made to recognise the severity of air pollution on the health of the population and the economy. Delhi and Mumbai are the two financial backbones of our country. The following measures need to be undertaken to curb air pollution in Delhi and Mumbai-

- (1) **Increase the AQI monitoring stations**- The adequate numbers of AQI monitoring stations as mandated by the National Clean Air Programme (NCAP) must be installed. Also, **sensor based AQI monitoring units** that give hyperlocal data must be set up.
- (2) **Enhanced powers to the authorities to take action according to the hyperlocal data**- It will help the authorities take **pre-emptive actions** and allow **denser monitoring**. For example, if it is found that construction is taking place in a certain pocket without following norms, the authorities can identify the location and immediately penalise the violators.

- (3) **National Nodal Authority for Air pollution-** India needs a **nodal authority with constitutional powers** to ensure collaborative pre-emptive action on air pollution with timelines for all stakeholders.
- (4) **Setting up Independent commissions for management of AQI-** Independent commissions like the **Commission for Air Quality Management (CAQM) for NCR and adjoining regions**, should be set up in other major cities like Mumbai and Chennai. It will help in taking actions against the violators irrespective of the geographical region. Regional or airshed approach must be used to counter the geographical challenge to air pollution management as done in Los Angeles, Mexico City and many mega-urban regions in China.
- (5) **Stricter guidelines for industrial emissions-** **SEBI's Business Responsibility and Sustainability Report (BRSR) framework** can lay down tighter guidelines to ensure uniformity in the unit of reporting pollutant emissions, declaration of air pollution mitigation targets (like companies do for carbon emissions), and reporting of disaggregated emissions data. We must reduce exposure across the value chain from production to consumption to recycling of goods and delivery of services.
- (6) **Making 'Clean air' an investment sector-** The push for substitution of fossil fuels will increase investment opportunities in clean energy transition sector like **green mobility, clean cooking**. This will open up a new sector for investment and will help in reducing the air pollution simultaneously.
- (7) **Funds and Manpower Training to combat pollution-** The Sixteenth Finance commission should provide finance to urban local bodies for climate change and air pollution reduction interventions. The urban local bodies manpower must be properly trained and the dysfunctional **State pollution Control Boards** must be empowered to take punitive actions.
- (8) **Increased awareness and incentive for civil society-** Different stakeholders need to know why cleaning the air will benefit their livelihoods and businesses. For instance, **farmers will not curb stubble burning until a viable circular economy** for alternative uses of biomass emerges. We must adopt sustainable lifestyles which are in line with government's LiFE initiative.
- (9) **Increased use of Public transport and reduced dependence on private vehicles-** **The Delhi Master Plan target of 80 per cent of motorised trips** by public transport by 2020 has not been met yet. The deadline has been shifted to 2041. This deadline needs to be met by augmenting the public transport system. The private vehicles use must be disincentivised by introducing **ward-wise parking management area plans** and **parking tax**.
- (10) **Limit crop residue burning-** We must implement known solutions like shifting to less water-intensive crops, **altering irrigation arrangements**, timing, harvesting, baling practices and building a wider year-round market for straw.
- (11) **End-to-end construction and waste management-** It is pivotal to reducing tonnes of dust and waste released in the air and water bodies.
- (12) **Learnings from London, China, Singapore, Hong Kong must be incorporated-** London does not allow private vehicles in areas well-connected by public transport. China uses '**fixed number of car sales per year**' in Beijing. We must improve the public transport like London, China, Singapore and Hong-Kong.

Read More- [Indian Express 1](#), [Indian Express 2](#), [Indian Express 3](#)

UPSC Syllabus- Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.

National Security Strategy of India- Explained Pointwise

Introduction

The process of bringing the '**National Security Strategy of India**' has kickstarted after years of deliberations in the military and strategic community. This is the **first time** that India will come out with a national security strategy. The **National Security Council Secretariat (NSCS)** is putting in place a comprehensive National Security Strategy in consultation with several Central ministries and departments. A final Cabinet approval will then be sought for it.

What is National security strategy?

National Security Strategy- A National Security Strategy document outlines the country's security objectives and the ways to be adopted to achieve these objectives. The strategy document **defines the traditional, non-traditional threats** and **introduces accountability** of agencies dealing with these threats.



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Countries having National Security Strategy

(1) **Developed Countries with advanced Military and security Infrastructure-** US, UK and Russia have published National Security Strategies which are updated from time to time.

(2) **India's Neighbours-** China has a Comprehensive National Security which is closely tied to its governance structure. Pakistan also has brought out a National Security Policy 2022-2026 which underlines its national security objectives and priority areas.

India's previous attempts at bringing National Security strategy

Three previous attempts were made to come out with a national security strategy, but there was hesitation at the political level.

What is the need for 'National Security Strategy of India'?

(1) **Rising Geopolitical tensions-** Security strategy document is needed to address the uncertainties arising from the recent geopolitical tensions like the **Israel-Hamas war, Russia-Ukraine War**.

(2) **Address modern non-traditional threats to India's security-** The security strategy of India will help in addressing the emerging non-traditional threats endangering the **financial and economic security, food and energy security, critical information infrastructure security** & supply chains and environment security.

(3) **Countering the traditional security threats-** Porous international borders, rising terrorism threats, escalating domestic insurgency (naxalism) and hostile neighbours like China and Pakistan, necessitate the need for a National Security Doctrine for India.

(4) **Impetus to military reforms and modernisation-** The security strategy will serve as a **guidebook** for **military modernisation** and **theaterisation**. **Goldwater-Nichols Act 1986** in the US (US military reform), reform in the UK military, or the Chinese People's Liberation Army (PLA) 2015 reforms, have all been driven by their national security strategy.

(5) **Political Direction to the Armed Forces-** In the absence of a comprehensive security strategy of India, **Raksha Mantri's operational Directive of 2009** is the only document providing political direction to the Armed Forces. This document has become **out-dated** and **needs to be revised**.

(6) **Clarity of roles for organisations created for National Security-** The security strategy will clarify the precise operational and advisory roles of national security related institutions like the National Security Council (**NSC**), the National Security Advisor (**NSA**), Chief of Defence Staff (**CDS**) and the Chiefs of Staff Committee.

(7) **Enhanced co-operation to counter the national security threats-** The security doctrine would help to maintain active cooperation between **security establishments at the Union and state levels** and would help in **inter-ministerial coordination** in tackling any threat to national security.

(8) **Enhanced accountability of the political Class-** National security strategy would enhance the political accountability in the management of defence forces and national security.

Read More- [Chief of Defence staff](#)

What are the Challenges in the implementation of the National Security strategy of India?

- (1) **Diverse and ever-evolving National security threats-** Creating a doctrine that comprehensively addresses all the ever evolving security challenges like **Cyberattacks, crypto-terrorism** is a complex task.
- (2) **Political Hesitation-** The political parties are reluctant to adopt the national security strategy on account of their increased accountability in the management of national security issues.
- (2) **Formulation of consensus amongst all stakeholders-** Balancing the competing interests and ideologies of all stakeholders like the government officials, policymakers and security agencies is a significant challenge.
- (3) **Lack of dedicated resources for implementation-** Efficient and effective allocation of resources for the implementation of this comprehensive security doctrine is also a significant challenge.
- (4) **Lack of public awareness and support-** The lack of public awareness regarding the need for a comprehensive national security strategy, has let the governments run Scott free for these many years without enacting a comprehensive security doctrine.

What Should be the way forward in drafting the National security strategy document?

- (1) **Use of previous national security reports-** Previous exercises undertaken to promote national security like the **Kargil Review Committee report** (2000), the **Report of the Naresh Chandra Task Force on Security** (2012) could serve as useful reference material for the National Security Strategy.
- (2) **Adequate representation of eminent intellectuals-** The drafting committee must include eminent persons from different disciplines who can look at India's national security from multiple dimensions.
- (3) **National security strategy must be citizen-centric-** National security strategy must reflect the values and beliefs of the people & must raise public awareness and shape public perceptions about national security issues.

Conclusion

Drawing up a National Security Strategy of India must be a key agenda for the government. The security strategy document must take the Constitution of India as its guide and its objective should be safeguarding and consolidation of India's democracy.

Read More- [The Indian Express](#)

UPSC Syllabus- GS 3- Internal Security- Various Security Forces and Agencies and their Mandate

Net Neutrality- Explained Pointwise

Introduction

Net Neutrality debate has again returned back in India, with the TRAI inviting a comprehensive consultation on the possible mechanisms for regulation of Over-The-Top (OTT) services.

The OTT consultation has renewed the clamour from the telecom companies that content providing platforms/OTT platforms such as **Netflix, Amazon Prime** and **Disney+ Hotstar** must share the costs of their bandwidth. Similarly in November 2022, these major telecom companies demanded that platforms such as **YouTube** and **WhatsApp** must pay a share of their revenue to **make up for the network costs**.

However, these demands from the major telecom players to charge the OTT companies and big platforms like You tube and Whats App, sets a dangerous precedent that **undermines the principle of net neutrality**.

Arguments for and against the Demand of Telcos of charging the OTTs

Arguments in favour of Charging	Arguments against Charging
The telecom companies argue that streaming platforms are free riders , which benefit from the infrastructure built and maintained by telecom companies.	Telecom companies do not own the internet, rather they only provide access to it. OTT platforms generate demand for internet access. Telecom companies must charge the customers rather than the OTT platforms to recover their infrastructure costs.
OTT services are not subjected to the same level of taxation and licensing fees as the telecom companies, which has led to an uneven playing field.	The OTT and the Internet access are two distinct markets because services from one are not substitutable for services in the other. Hence the Telcos (internet access providers) should not look to cross-subsidise their costs by charging the OTT rather than their customers.
Telecom companies revenue from traditional streams such as voice calls and Short Message Service (SMS) has come under pressure. The OTT services often provide free services. Ex- Whats app Voice calls .	The use of OTT services has led to a surge in data consumption , which is a growing revenue stream for telecom companies.

What is Net Neutrality and what has been India's position on it?

Net Neutrality- It is the principle that Internet service providers (ISP) and governments regulating the Internet, should treat all data on the Internet the same and should not discriminate or charge differentially.

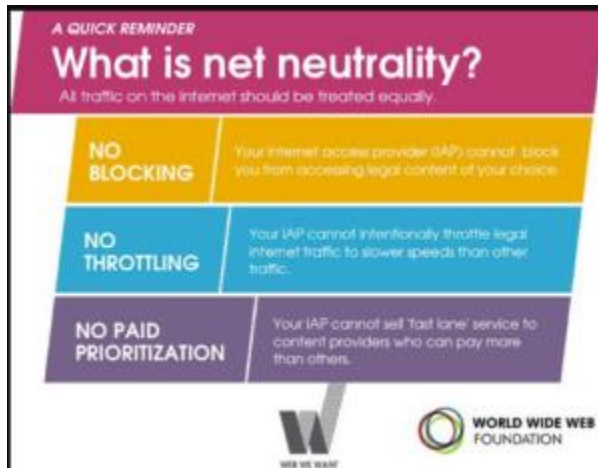
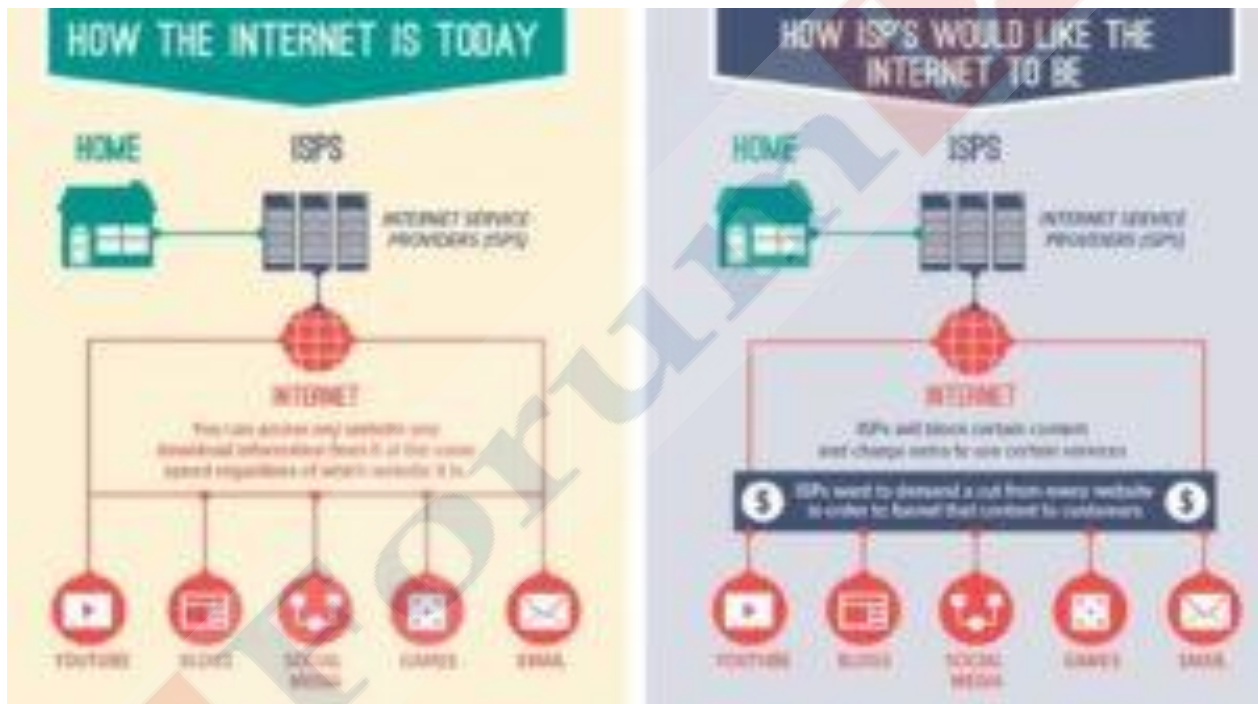


Figure 4. Source- World wide Web Foundation



Source- Wikimedia Commons

Evolution and implementation of net neutrality principle in India

There is **no specific law** which specifically governs the principle of net neutrality in India. However, TRAI has released various regulations/guidelines at different times, which have in general have governed the breach of the principle.

2014	Telecom operator Bharti Airtel decided to charge its customers for the internet calls. These led to widespread protests and demands for net neutrality.
2015	Department of Telecommunication (DoT) constituted a six-member committee on Net Neutrality to recommend overall policy Regulations and Technical responses.

2016	TRAI released the Prohibition of Discriminatory Tariffs for Data Services Regulations . Under this regulation, all traffic on the internet needs to be treated equally. This regulation was invoked to ban Free Basics and Airtel Zero in India, which violated the principles of net Neutrality.
2018	Department of Telecommunications (DoT) released the Regulatory framework on Net Neutrality . Internet service providers (ISPs) were disallowed from indulging in any kind of discriminatory treatment of content, including practices like blocking specific websites or speeding/ slowing down of content.

Read More- [TRAI Recommendations on Net Neutrality](#)

What are the advantages of 'net-neutrality'?

Protection of Small Entrepreneurs- Net Neutrality is extremely important for small business owners and start-ups who can launch their businesses online, advertise the products and sell them openly, without any discrimination. **Ex- Myntra could compete with Amazon in India due to Net Neutrality.**

Boost to economic growth- It has enabled the growth and development of **unicorn startups** based on free and democratised internet. **Ex- India has witnessed the growth of over 100 unicorn startups** due to net-neutrality.

Employment Generation- Digital economy based on the principles of neutrality of internet has created employment opportunities in both formal sector (**coders**) and informal sectors (**gig workers**).

Increasing Internet Penetration- Affordable tariffs due to internet neutrality have enabled internet penetration including the rural areas. This has facilitated access to public services in rural areas. **Ex- E-governance platforms adoption in rural India.**

Low tariffs of internet increasing its affordability- Net neutrality principles have ensured that internet tariffs remain low due to increase in consumer base of customers. **India has one of the largest internet user base in India.**

Freedom of speech and expression- It has enabled everyone to access the internet and exercise their freedom of speech and expression (Art 19(1)) through multiple platforms like **Twitter and Koo.**

Equality of customers- The lack of neutrality of internet, would also mean that instead of free access, there could be "**package plans**" for consumers. For example, users may have to pay more to access international websites compared to websites based in their own country. This would **create a tiered internet system** where users who pay more get better access to content.

What are the Challenges with 'Net Neutrality'?

Decrease in Investment in internet infrastructure- Network Operators have to invest in maintaining and expanding the internet's infrastructure to support new internet services. However, most of the benefits are reaped by Internet content companies like Google, Facebook, Youtube etc. This has led to reduction in investment by network operators in internet infrastructure. **Ex- Financial strain on Indian network operators like Vodafone-Idea.**

Less availability of free vital services- Opponents of internet neutrality contend that more vital services (like online healthcare) could be made accessible for free **if the companies that draw excess bandwidth (e.g. the video streaming websites/OTTs) are charged extra** for their heavy use.

Access to Objectionable Content- **Offensive, dangerous, illicit and illegal** content is accessible to everyone through net neutrality, and is difficult to filter out.

Burdensome Regulations- Net neutrality created burdensome and overreaching regulations to govern the internet e.g., Net Neutrality rules mandate **extra reporting standards for ISPs** to ensure compliance which **adds to costs**.

Net Neutrality not necessary for Tech Evolution- Critics of Net Neutrality argue that the internet developed amazingly well even in the absence of Net Neutrality e.g., **most large internet companies including Google (1998), Facebook (2004), YouTube (2005) and Twitter (2006) were started and grew to success without any regulations**.

What should be the way forward?

Telecom companies/Network operators to charge their customers- The network operators **must charge their customers and not the internet content platforms**. The increased internet data usage must be used by the telecom companies as one of their primary revenue streams.

Government intervention to help the telecom companies- The government must **reduce spectrum fees** and support the telecom companies through the **Universal Service Obligation Fund (USOF)**.

Increased investment by telecom companies- Telecom companies must also make adequate investments to cater to the explosion of data traffic due to these OTT platforms.

Regulatory body to uphold Net Neutrality- The TRAI has recommended the establishment of a regulatory body to uphold Net Neutrality. This should be discussed with all stakeholders and taken forward.

Conclusion

It is imperative for all stakeholders, including policymakers, to **recognise the long-term ramifications of acquiescing to the short-sighted demands** of telecom companies. Upholding the principles of net neutrality is not merely about preserving the ethos of an open Internet but is also intrinsic to fostering a **conducive environment for innovation, competition, and consumer welfare**, especially countries such as India where the Internet is going to be the carrier of all **Digital Public Infrastructure (DPI)**.

Read More- [The Hindu](#)

UPSC Syllabus- GS II- Government policies and interventions for development in various sectors and issues arising out of their design and implementation; **GS III-** Awareness in the field of IT

Deepfakes- Explained Pointwise

Introduction

Deepfakes are back in news, after a video of actor Rashmika Mandanna has recently gone viral on social media. Responding to the video, Rajeev Chandrasekhar, the Union Minister for Electronics & Technology, has said that deep fakes are the latest and a “**more dangerous and damaging form of misinformation**” that needs to be dealt with by social media platforms.

Ministry of Electronics and Information Technology (Meity) has sent notices to “all social media intermediaries” like Facebook, Youtube and Instagram, reminding them that online impersonation is illegal under **Section 66D of the Information Technology Act, 2000**. The Ministry has warned these platforms to take down such content within **24 hours**, a requirement which has been outlined in the **IT Rules, 2021**.

What are Deepfakes and the technology behind these deepfakes?

Deepfakes- Deepfakes are **fake content in the form of videos, pictures and audio** which are created using powerful artificial intelligence tools. The origin of the word “deepfake” can be traced back to 2017 when a Reddit user, with the username “deepfakes”, posted explicit videos of celebrities.

Technology used behind these deepfakes-

- (1) The technology involves modifying or creating images and videos using a machine learning technique called **generative adversarial network (GAN)**. This AI-driven software detects and learns the subjects’ movements and facial expressions from the source material and then duplicates these in another video or image.
- (2) To ensure that the deepfake created is as close to real as possible, creators use a large database of source images. This is why more deepfake videos are created of public figures, celebrities and politicians.
- (3) The dataset is then used by one software to create a fake video, while a second software is used to detect signs of forgery in it. Through the collaborative work of the two software, the fake video is rendered until the second software package can no longer detect the forgery. This is known as “**unsupervised learning**”, when machine-language models teach themselves. The method makes it difficult for other software to identify deepfakes.



Figure 5. Source- VPNoverview.com

fake. People start dismissing reality as fake.

What are the challenges being posed by deepfakes?

- (1) **Promotes ‘Liar’s Dividend’**- Liar’s Dividend refers to the situation when **an undesirable truth is dismissed as deepfake or fake news**. Leaders weaponise deepfakes to replace an actual piece of media and truth. Ex- **Donald Trump Deepfake videos**. Deepfakes blur the line between reality and

(2) **Erosion of trust in democratic processes like elections-** Doctored content, most likely in the form of a realistic fake video is presented as fact to alter public perception and create democratic deficit. For Ex- **Capitol Hill violence, 2021** was incited by using deep fake media.

(3) **Crime against women-** The deepfakes are being used as a weapon to attack women dignity and chastity. According to AI company Deeptrace report, over **90% of the deepfake videos are pornographic** in nature.

(4) **Fuelling Radicalisation and violence-** The non-state actors like **ISIS** and **Al-Qaeda**, use fake videos to stir anti-state sentiments among people. For Ex- **Fake videos** showing **armed forces** committing 'crimes in conflict areas'.

(5) **Rise in cyber crimes-** Cyber criminals are using deepfake technology to carry out **phishing attacks**, **financial frauds** and **identity theft**. Researchers have observed a 230% increase in deepfake usage by cybercriminals and scammers. For Ex- CEO of a U.K. energy company was tricked using **deepfake audio to transfer €2,20,000 to fraudsters**.

(6) **Means of 'hybrid warfare' or 'grey zone tactics'-** Countries have been using the deepfakes to spread misinformation and for espionage. European Union has termed these deepfakes as '**Foreign Information manipulation Interference**'. For Ex- China has been employing deepfakes of injured Indian Soldiers by the PLA Army.

(7) **Trust deficit in traditional media-** Even mainstream news sources often fall for the propagandist misinformation which enhances trust deficit in these media channels. For Ex- **Morphed video of Zelensky** asking his soldiers to surrender was widely played on main stream media.

However, as we know that technology is a double-edged sword, there are also some benefits associated with deepfake technology.

How can the Deepfakes be used for common good?

(1) **Use in the field of creative art and Entertainment-** The deepfake technology can be used to improve the dubbing on foreign language, films and resurrect dead actors. For ex- **Samsung artificial intelligence lab** in Moscow has brought **Monalisa to life** by using deep fake technology.

(2) **Voice restoration-** The technology has been used to restore the voices of patients suffering from amyotrophic lateral sclerosis. Various '**Voice cloning initiatives**' have been launched.

(3) **Creating empathy for people of War torn regions-** Projects like the **Deep empathy project** of MIT and UNICEF has been increasing empathy for victims of a disaster region by creating AI-images of war-torn regions like Syria, Yemen.

What is the status of deepfakes regulation in India and across the world?

India	(1) India does not have specific laws or regulations that ban or regulate the use of deepfake technology. (2) Sections 67 and 67A of the Information Technology Act (2000) related to defamation and publishing explicit material is applied in cases of deepfakes. (3) India's IT Rules, 2021 require that all content reported to be fake or produced using deep fake be taken down by intermediary platforms within 36 hours. (4) Section 500 of the Indian Penal Code (1860) also provides punishment for defamation.
US	The U.S. introduced the bipartisan Deepfake Task Force Act to assist the Department of Homeland Security (DHS) to counter deepfake technology.
EU	(1) European Union has updated Code of Practice on Disinformation that was introduced in 2018 to stop the spread of disinformation through deepfakes. (2) The EU has issued guidelines for the creation of an independent network of fact-checkers to help analyse the sources and processes of content creation
China	China has introduced Comprehensive Regulation on Deep Synthesis aimed at curbing disinformation.

What should be the way forward?

- Responsibility of social media intermediaries-** Social media intermediaries have to develop technology to detect and report deepfakes on their sites like watermarking AI-generated content. For Ex- **Microsoft's video authenticator** is a new anti-deep fake technology to fight misinformation.
- Blockchain-based Deepfake Verification-** The use of blockchain technology for media creation will allow the individuals to **trace the origin and modification history of media**. This will discourage the creation and dissemination of malicious deepfakes.
- Digital India Act-** The forthcoming Digital India Act must have **penal provisions in case of malicious deepfakes**. India must take lessons from China's comprehensive regulations on deepfakes.
- Public awareness and responsibility-** Social awareness about the menace of malicious fake videos must be promoted. The public must be made aware of '**Pause, think and share**' principle for social media.
- Implementing the principles of Bletchley Declaration-** The declaration calls to address risks and responsibilities associated with frontier AI like deepfakes. India, which is amongst the signatories must take a lead in finalising the **global AI regulatory framework**, in accordance with the declaration principles.

Read More- Bletchley Declaration

Read More- [Indian Express 1](#), [Indian Express 2](#)
UPSC Syllabus- GS III- Awareness in the fields of IT

Loss and Damage Fund- Explained Pointwise

Introduction

Loss and Damage Fund is in sharp focus due to the upcoming UNFCCC Conference of Parties (COP 28) to be held in the UAE. After tough negotiations at COP 27 in Egypt in 2022, it was agreed that Loss and Damage Fund (LDF) must be provided to nations vulnerable to or impacted by climate change consequences. COP 28 is expected to **finalise and declare the rulebook on the structure of LDF**.

However, **India** is of the opinion that the Loss and Damage Fund (LDF) should not be limited to small island and least developed nations only, rather it must also include **developing nations like India**. There are several disagreements over the modalities and operation of this fund, which has made the fund a contentious issue.

What is Loss and Damage Fund, and what is the history of genesis of its demand?

There are three pillars of dealing with climate change.

Mitigation	Adaptation	Loss and Damage
Mitigation measures refer to the actions which must be taken to limit climate change. For Ex- Cutting greenhouse gas emissions	Adaptation measures refer to the proactive actions taken by countries to cope with the changes induced by climate change. For Ex- Great Green Wall Initiative in the Sahel and West Africa to reduce global warming effect in Africa.	Loss and Damage refers to the irreversible consequences of climate change. It represents the climate change impact that can't be avoided or mitigated through adaptation efforts. Ex- Floods in Pakistan or risk of submergence of Maldives due to rising sea levels .

Loss and Damage Fund- The Loss and Damage Fund is to fund the poorer nations (Small Island Nations like Tonga, Fiji) that have made negligible contribution to climate change but are more vulnerable to extreme climate events.

Principle behind the Fund- The fund is based on the "**polluters pay principle**". Polluter Pay principle makes the polluter liable for paying the cost of remedial action and compensation for the victims of environmental damage caused by their actions. Thus, the rich and developed nations, which are majorly responsible for industrial emissions, must pay the poorer nations that have made negligible contribution to global warming.

What is “loss and damage”?

The phrase refers to costs already being incurred from climate-fuelled weather extremes or impacts, like rising sea levels

- Climate funding so far has focused on cutting CO2 emissions, while a third of it went towards helping communities adapt to future impacts



- Loss and damage funding is expected to cover the cost of damage that countries cannot avoid or adapt to

\$525 billion, or 20% of their collective GDP. This could go up to \$580 billion per year by 2030

- A report by 55 vulnerable countries estimated that their combined climate-linked losses in the last two decades totalled

- Vulnerable countries and campaigners argue that rich countries that caused the bulk of climate change with their historical greenhouse gas emissions should pay

Source: Reuters

Source-The Hindu

Genesis of the LDF-

The movement of Loss and Damage Fund (LDF) is a three-decade old movement which was first initiated by the island nation of **Vanuatu** and the **Alliance of Small Island States**. The progress made at various UNFCCC Conference of Parties (COP) are as follows-

COP 19, 2013	At COP 19 in Warsaw, representatives of member countries formally agreed to establish the L&D fund.
COP 25, 2019	Santiago Network for L&D was set up, but the developed countries didn't commit any funds
COP 26, 2021	Glasgow Dialogue on finance for L&D was established to continue discussions over the next three years on the fund.
COP 27, 2022	At COP 27, the member states agreed to set up the L&D fund and a Transitional Committee (TC) to figure out how the new funding mechanisms

	under the fund would operate. The TC was also to prepare recommendations that countries would consider, deliberate on, and potentially adopt by COP 28.
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What are the Challenges with operationalisation of the Loss and Damage Fund?

The Transitional committee (TC) formed after COP 27, has been encountering several challenges to get the Loss and Damage Fund operationalised. The key issues are mentioned below-

- (1) **Hosting of the fund at the World Bank-** The World Bank charges an **exorbitant overhead fee** for maintaining any fund with it. The developing countries want a dedicated funding mechanism and an independent secretariat.
- (2) **Reluctance of Developed countries to contribute to the fund-** The developed nations, particularly the U.S., have remained non-committal about being primary donors to the fund.
- (3) **Rejection of Common But Differentiated Responsibilities (CBDR) principle-** The developed countries have rejected references to the CBDR, equity, and liability in the fund's draft. This has watered down the spirit and intent of the L&D fund.

Read More- [Common But Differentiated Responsibilities](#)

- (4) **No Commitment over the size of the Fund-** There has been no consensus over the size of the fund.
- (5) **Assessment of Losses-** The true assessment of losses is a contentious issue, as it is difficult to ascertain how much of the damage is due to climate change and how much is due to governance failure. **Ex- Estimation of loss due to Pakistan flood.**
- (6) **Inclusion of Developing Countries-** India also wants the inclusion of Developing countries in the fund (as discussed in the introduction of the article).

What are the implications of the impasse over the Loss and Damage Fund?

- (1) **Threatens climate justice-** The impasse over the fund threatens climate justice and exacerbates the suffering of vulnerable communities in developing nations. These vulnerable communities have **contributed minimally** to global emissions, but today **bear the maximum brunt** of climate change.
- (2) **Increase humanitarian crises-** The delay in implementation of the fund will increase humanitarian crises like **food shortages**, human displacement and conflict.
- (3) **Worsen the environmental crises-** Without adequate L&D funds, there will also be limited capacity to address **environmental degradation** and **the loss of vital ecosystems**. This will further worsen environmental crises which are already causing irreversible harm to the earth.
- (4) **Internal conflicts-** Conflicts and tensions emerge in vulnerable nations due to climate change, which can spill across borders. For Ex- **Central American Caravan**.
- (5) **Increase of divide between the developed and developing nations-** This impasse has created a substantial divide between wealthy and impoverished nations with regard to **climate reparations** and their **historical responsibilities of global warming**.

(6) **Breakdown of diplomatic efforts-** This deadlock shows the **failure** of the international community to **collectively address** the contentious issue of climate change and other pressing global issues.

What are the advantages of Loss and Damage Fund?

(1) **Holistic coverage of losses due to climate change-** Loss and Damage not only includes the economic losses but also the human casualties, and the degradation of ecosystems and cultural heritage. Hence, the **fund will comprehensively cover all the losses** due to climate change.

(2) **Ensures Climate Justice-** The fund ensures climate justice to the **vulnerable communities** of Small Island nations and least developing countries, who have **paid the price without even polluting** the environment.

(3) **Shift of Direction of climate finance-** Climate finance has till now focused only on mitigation and adaptation. Two-third of the finance has gone into climate change mitigation and one third has gone into adaptation. The LDF draws the focus of climate finance towards **reparations for the loss and damage**.

What Should be the Way forward?

1. **Sustenance of political commitment for LDF-** Sustained political pressure on the issue of LDF will yield fruitful results, similar to the **Green Climate Fund**.

2. **Windfall tax on oil and gas companies' profits-** The windfall tax on oil and gas companies profit's can be used to fund the Loss and Damage Fund.

3. **International insurance pool-** In the time being, till the developed countries do not commit to grants, the option of creating an international insurance pool to fund the loss and damage can be explored.

4. **Implementation of the "Global Shield Scheme against climate risks"-** The German-backed "Global Shield Scheme against climate risks" was also one of the outcomes of COP 27. The Shield is aimed at increasing pre-arranged finance to be disbursed before or just after disasters happen. Till the LDF is not operationalised, this scheme needs to be implemented vigorously.

Conclusion

The L&D fund was conceived as a critical component of global climate action. So to achieve climate justice, rich countries must deliver finance in line with what is fair and just to the Small Islands and Least Developing countries.

Read More- [The Hindu](#)

UPSC Syllabus- GS III- Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Artificial Rain by Cloud Seeding- Explained Pointwise

Introduction

Use of **Cloud Seeding to induce artificial rain**, is being explored as an option by the Delhi Government to combat the rising air pollution levels in Delhi. The government is holding a meeting with experts from IIT Kanpur to discuss the prospects of cloud seeding in Delhi. The comprehensive proposal from IIT Kanpur will be subsequently presented to the Supreme Court for review.

What is Cloud seeding, and how does it induce Artificial rain?

Cloud Seeding- Cloud seeding is a kind of **weather modification technology** to create artificial rain. It works only when there are enough pre-existing clouds in the atmosphere.

Process of cloud seeding for generating artificial rain

1. The '**seeds**' of rain like the iodides of silver or potassium, dry ice (solid carbon dioxide), or liquid propane are inserted into the Clouds. The seeds can be delivered by plane or simply by spraying from the ground.
2. These 'seeds' of rain provide a chemical 'nuclei' around which the **condensation of water droplets** is accelerated.
3. Rain happens when the condensed water droplets reach at a level when it can no longer be held around the nucleus.

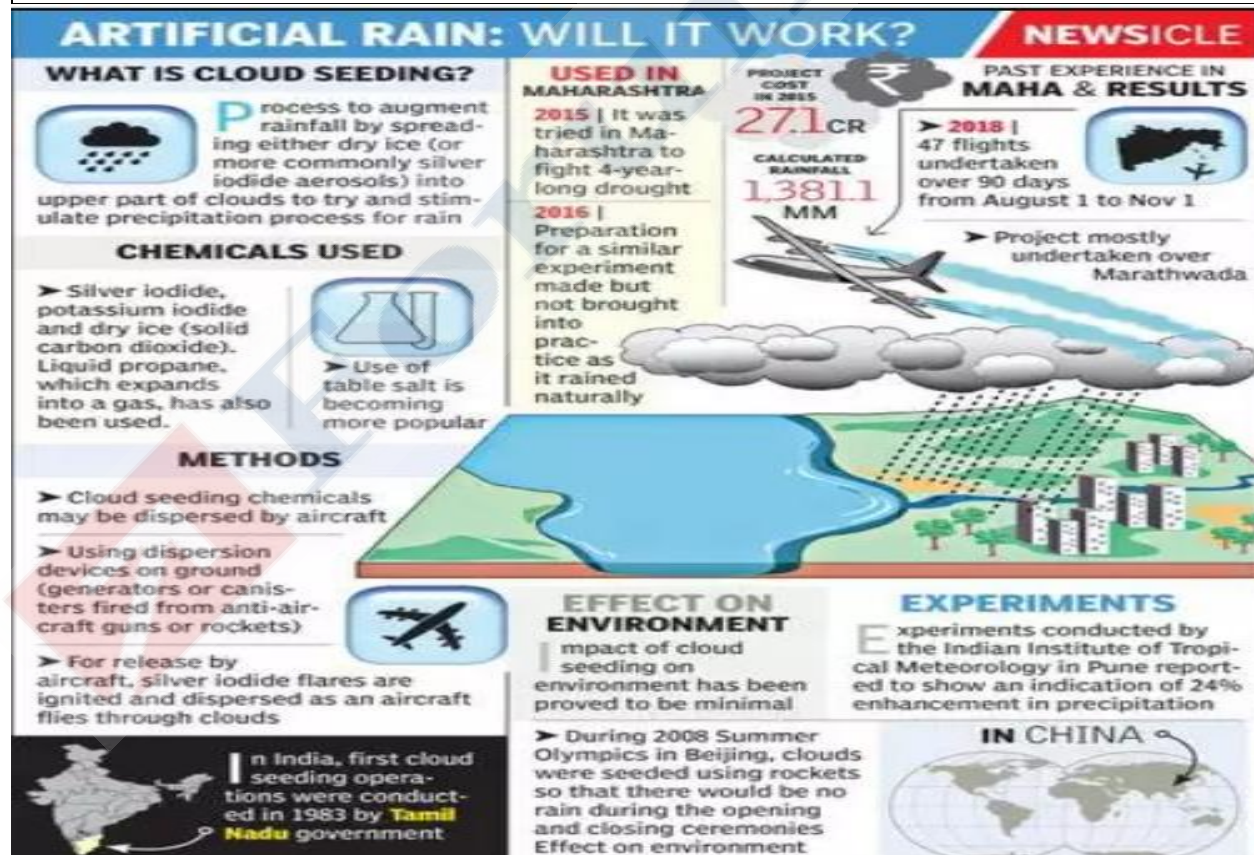


Figure 6. Source-The Times of India

Examples of Use of Cloud Seeding technique to generate artificial rain

1. **UAE-** The United Arab Emirates (UAE) has been using the cloud seeding to increase rainfall in their arid region.
2. **China-** China has been using the measure like the **Beijing Olympics, 2008**.
3. **India-** Cloud seeding was used in **Solapur** in Maharashtra, which led to an increase in about 18% of rainfall.

What are the advantages of artificial rain induced by cloud seeding?

1. **Reduction of air pollution levels-** Raindrops capture airborne particulate matter like PM 10 and pollutants like dust, smoke and chemicals. Thus, the pollutants are washed out from the atmosphere by this method. Ex- **China employed this to clean Beijing's air during the Beijing Olympics, 2008**.
2. **Controlling forest fires-** In regions prone to wildfires, cloud seeding is used to induce rainfall and help extinguish fires. This, prevents the release of smoke and pollutants into the atmosphere. Ex- **Australian Bushfires**.
3. **Agriculture-** Artificial rain benefit agriculture by providing much-needed moisture for crops, in drought-stricken areas. Ex- **'Project Varshadhari'** in Karnataka in 2017.
4. **Power Generation-** Cloud seeding experiments has helped to augment the production of hydroelectricity during the last 40 years in **Tasmania, Australia**.
5. **Fog Dispersal, Hail Suppression, and Cyclone Modification-** USA launched **"Project Sky Water"** in 1962 for weather modification through cloud seeding. The project aimed at fog dispersal, hail suppression, and cyclone modification.

Read More- [Explained: How successful is cloud seeding technology](#)

What are the challenges associated with the process of Cloud seeding?

1. **Requirement of moisture-filled clouds-** The requirement of clouds laden with a bare minimum moisture is required to start the process of cloud seeding. Ex- **Delhi in winters lack moisture laden clouds, making artificial rains difficult to achieve**.
2. **Unintended Environmental Impacts-** The chemicals used in the process like the silver iodide or potassium iodide carry the risk of **bioaccumulation** and **potential toxicity**. The use of dry ice (solid carbon dioxide) can further contribute to global warming.
3. **Alteration with the natural weather pattern-** Altering weather patterns in one region can affect weather patterns in neighbouring areas, potentially **causing droughts or excessive rainfall in unintended places**.
4. **High cost-** This method entails huge logistic costs as it involves release of expensive chemicals into the sky with help of flare shots or aircraft.
5. **International Disputes-** Weather systems do not adhere to political borders. Cloud seeding in one region can affect weather patterns in neighbouring countries, leading to potential diplomatic and international concerns.

6. **Ethical and Legal Challenges-** There are ethical concerns about artificially modifying weather patterns, as it may affect the natural balance of ecosystems and disrupt the environment. Legal issues related to **liability and compensation** for potential damages can also arise in future.

What Should be the way Forward?

Since the cloud seeding technology has several associated risks with it, we must be careful in hastily employing the technology for short term gains. Mentioned below are the ways to move forward-

1. **Build Scientific consensus-** The scientific community must debate on the effectiveness of the technology and build universal consensus on its efficacy. The long-term impact of cloud seeding on ecosystems like water resources, air quality and climate, must be thoroughly researched.
2. **Evolve proper regulatory mechanism-** Proper regulatory mechanism must be evolved to ensure accountability and transparency of these programs.
3. **Address Public Concerns-** The concerns of the public must be addressed before embarking on such ambitious programs.

Read More- [The Indian Express](#)

UPSC Syllabus- GS III- Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Ice Sheet Melting- Explained Pointwise

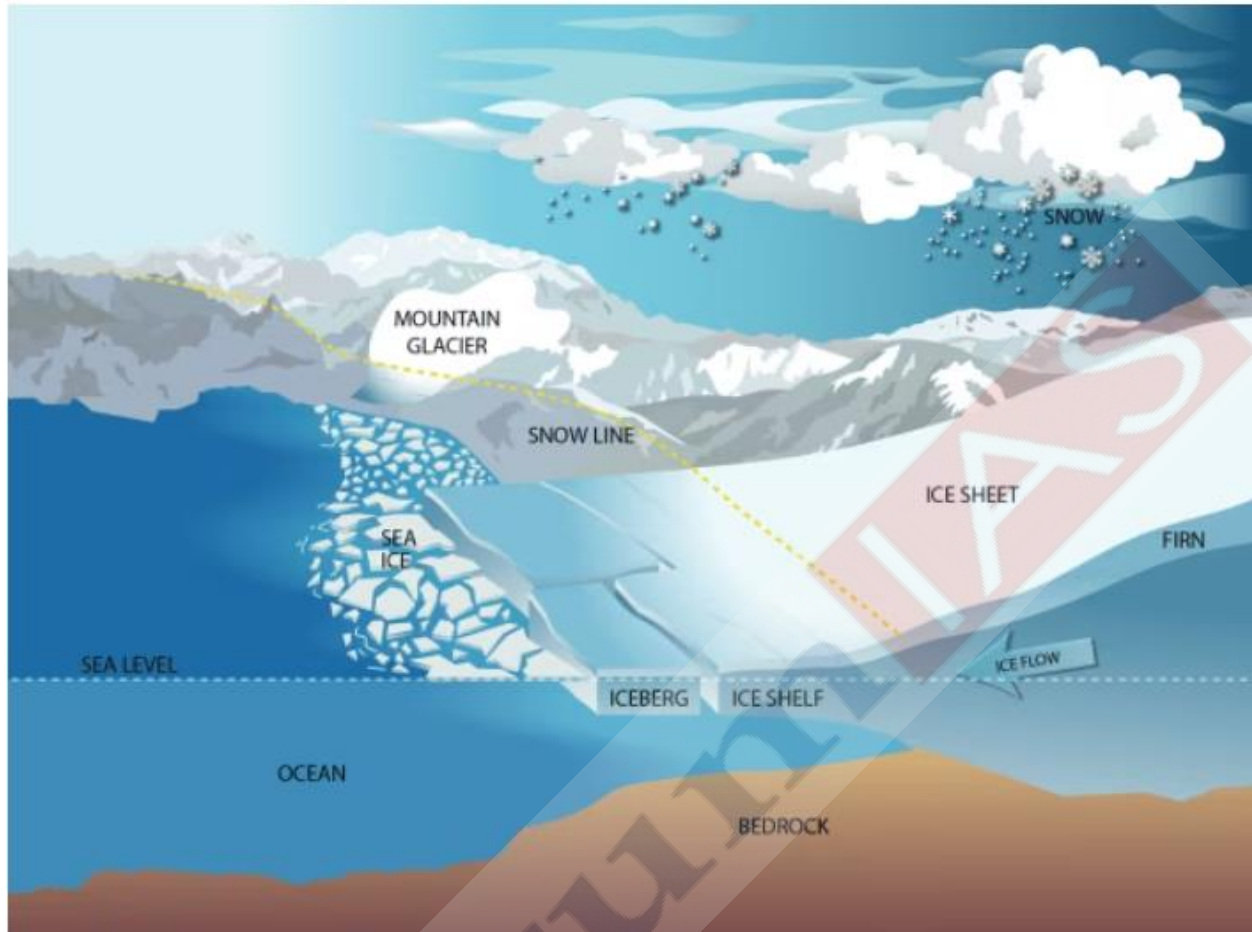
Introduction

According to a recent study, the **melting of the ice sheet in Western Antarctica** is unavoidable, no matter how much carbon emissions are cut. The ice sheet melting would result in **global mean sea level rise of 5.3 metres** or 17.4 feet. This would have a potentially devastating consequence for millions of people living in vulnerable coastal cities across the world, including in India.

What is Ice Sheet, ice shelf and sea ice?

Ice Sheet- An ice sheet is a mass of glacial ice. The ice sheet covers more than 50,000 square kilometres of land. There are two major ice sheets in the world today-**Greenland ice sheet** and **Antarctica ice sheet**. Together, they contain about two-thirds of all the freshwater on Earth.

Ice sheets are different from sea ice- Sea ice is created by freezing of sea water. Sea ice is free-floating ice that surrounds the polar regions. Ice sheet, on the other hand, is the large glacial ice mass. The outermost edge of the ice sheet, known as **ice shelf**, floats on the ocean. **The following diagram depicts the ice sheet, ice shelf and sea ice-**



An illustration of most of Earth's ice features, including the ice sheet. Credit: NASA

Source-The Indian Express and NASA

According to a report by the National Aeronautics and Space Administration (NASA)- When ice sheets gain mass, they contribute to a fall in global mean sea level, and when they lose mass, they contribute to a rise in global mean sea level.

What is the reason behind the Antarctic ice sheet melting?

1. Erosion of the ice shelves by warming of the Amundsen sea- Ice shelves stabilise the land-based glaciers just behind them. The Amundsen sea located in Western Antarctica has been continuously warming since the last century.

The warm ocean water has been eroding the ice shelves. **As these ice shelves are getting eroded, the ice sheet melting behind them has accelerated.** This has been releasing more ice into the ocean, consequently causing sea level rise.



Antarctica ice mass variation since 2002. Credit: NASA

Source-The Indian Express

2. **Global Warming**-The Climate change which has resulted in increase of the global oceanic temperature has further accelerated the process of Antarctic ice loss.

Read More- [Reasons behind Global Warming](#)

What are the consequences of the ice sheet melting?

1. **Sea Level Rise**- The melting of Greenland and Antarctic ice sheets are the largest contributors of global sea level rise. According to WWF report- The **Greenland ice sheet melting contributes to 20% of current sea level rise.**
2. **Increase in Coastal erosion and storms**- The rising sea levels lead to coastal erosion like **receding beach area of Maldives.** The warming of air and ocean temperatures, create more frequent and intense coastal storm surges like **hurricanes and typhoons.**
3. **Change in global oceanic circulation**- The ice sheet melting in Antarctic and Greenland is changing the oceanic circulation of the Atlantic Ocean **like the weakening of Atlantic Meridional Overturning Current(AMOC).**

Read More- [Atlantic Meridional Overturning Current\(AMOC\)](#)

4. **Effect on coastal wildlife**- With the melting of ice sheets, **wildlife like walrus** are losing their home and **polar bears** are spending more time on land. This has resulted in higher rates of conflict between people and bears.

5. **Increased vulnerability of Coastal Regions, including India-** Coastal communities face risk of displacement and becoming **climate refugees** as their lives and livelihoods get threatened due to sea level rise. For Ex- **The collapse of fisheries in the Gulf of Maine.**

Initiatives related to protection to Antarctic ice sheet

1. **Antarctic Treaty-** It has been signed to help safeguard the Antarctic environment and provide a framework for addressing the challenges arising from the threats of ice sheet melting.
2. **Convention on the Conservation of Antarctic Marine Living Resources-** To protect the wildlife and environmental resources of Antarctica.
3. **Research and monitoring stations-** India's research stations at Antarctica like Maitri and Bharati to observe the changes in Antarctic environment.

What should be the way forward to stop the melting and the sea level rise?

We have reached the point where some impacts of climate change can no longer be avoided, and substantial ice loss in West Antarctica is probably one of them. However, we must take the following measures to stop further melting of ice sheets.

1. **Strict adherence to the Antarctic Treaty and Paris Agreement-** We must strictly adhere to these treaties to preserve the continent's unique environment and ecosystems. This involves regulating human activities, waste management and minimizing the environmental footprint.
2. **Protect the loss of the East Antarctic Ice Sheet-** We must take adequate steps to stop further loss of ice sheets in other parts of Antarctic like the east Antarctic.
3. **Use of Geoengineering Techniques-** Geoengineering techniques like the **solar radiation management** must be applied to slow down the ice sheet melting.

Read More- [The Indian Express](#)

UPSC Syllabus- GS 1-geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

GS 3- Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Insolvency and Bankruptcy Code- Explained Pointwise

Introduction

Recently, the Supreme Court gave its ruling on the Insolvency and Bankruptcy Code. SC in its ruling **affirmed key provisions** of the Insolvency and Bankruptcy Code, (IBC) 2016 and held that the procedure contemplated under the law has been "carefully calibrated". Various industrialists and promoters, including **Anil Ambani**, Venugopal Dhoot, Sanjay Singal and Kishore Biyani, **were petitioners** in the case

Brief snippet of the Case

Arguments of Petitions against IBC 2016	SC Judgement
<p>(1) Sec 95 & Sec 96 of the IBC 2016 allows the lenders to initiate insolvency proceedings against personal guarantors and promoters, without giving them the opportunity to present their stand.</p> <p>(2) The petitioners argued that it was violative of the right to equality (Art 14) of the promoters/debtors and went against the principles of natural justice.</p>	<p>(1) SC in its judgement upheld the provisions of the Sec 95 & 96 of the IBC 2016.</p> <p>(2) SC held that the statute was not violative of Article 14 (equality and equal protection of law) of the Constitution.</p>
<p>(1) Sec 97, 99 & 100 of the IBC allowed for the appointment of a Resolution professional (RP). RPs submit the report to NCLT/DRT, which then decide to proceed for resolution/liquidation. The debtors are then called to submit their views.</p> <p>(2) The petitioners demanded that the procedure of the IBC must be changed. The Debtor must be given a chance to present his case before the appointment of RPs.</p>	<p>(1) SC held that the procedure contemplated under the IBC has been "carefully calibrated" by the parliament.</p> <p>(2) SC rejected the petitioner's plea to amend the procedure of the IBC to grant the corporate debtor a hearing before the appointment and report of the resolution professional.</p>

What is Insolvency and Bankruptcy Code 2016?

The Insolvency and Bankruptcy Code was enacted in 2016, and it replaced all the existing laws with a uniform procedure to **resolve insolvency and bankruptcy disputes**. The code aimed to address the issue of Non-performing Assets (NPAs) and debt defaults.

Terminologies related to the Insolvency and Bankruptcy Code 2016

Key Terminology

- **Insolvency:** It is a situation in which a debtor is unable to pay his/her debts.
- **Bankruptcy:** It is a legal proceeding involving a person or business that is unable to repay their outstanding debts.
- **Liquidation:** It is a process of bringing a business/company to an end. It involves distribution of company's assets among creditors and other claimants.
- **Haircut:** It refers to the reduction in the value of an asset. For example, if haircut is 80%, then 80% of credit owed to its creditors will not get recovered.
- **Moral Hazard:** It is a situation where an economic actor has an incentive to increase its exposure to risk because it does not bear the full costs of that risk.

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Aims and objectives of the Insolvency and Bankruptcy code

- (1) Consolidation and amendment of all existing insolvency laws in India.
- (2) Simplification and expedition of the Insolvency and Bankruptcy proceedings in India
- (3) Protection of the interests of creditors and stakeholders in the company
- (4) Reviving the company in a time bound manner

Institutional framework followed by the Insolvency and Bankruptcy code

The Code creates a new institutional framework. This framework facilitated a formal and time-bound insolvency resolution process and liquidation. The framework includes:

Insolvency Professionals	They will administer the resolution process. They also manage the assets of the debtor and provide information for creditors to assist them in decision-making.
Insolvency Professional Agencies	The insolvency professionals will be registered with insolvency professional agencies. The agencies would conduct examinations to certify the insolvency professionals and enforce a code of conduct for their performance.
Information utilities	They will keep a record of debts given by creditors along with details of repayments/ dishonour of debt.
Adjudicating authorities	They will give the approval to initiate the resolution process, appoint the insolvency professional, and approve the final decision of creditors.
National Company Law Tribunal(NCLT)	It is the adjudicating authority for companies and limited liability entities.
Debt Recovery Tribunal (DRT)	It is the adjudicating authority for individuals and partnership firms.
Insolvency and Bankruptcy Board of India (IBBI)	The Board will regulate insolvency professionals, insolvency professional agencies and information utilities set up under the Code.

Time period for insolvency resolution as mentioned in the code

The code aims to resolve insolvencies in a strict time-bound manner. The Insolvency and Bankruptcy Code 2016, **initially** set a **180-day deadline** for concluding the resolution process, **allowing** a potential **extension** of **90 days**.

However, subsequent amendments to the IBC extended the overall timeline for completion to **330 days**. This includes any extension or litigation period. But, in exceptional cases, the time limit can be extended even beyond 330 days.

Read More- [On Insolvency and Bankruptcy Code of India – Keep Your Promise](#)

What have been the positive outcomes of the IBC 2016?

- (1) **Increase in the rate of recovery of the lenders/creditors-** Lok Adalat, Debt Recovery Tribunal and SARFAESI Act, which were the recovery mechanisms available to lenders before enactment of the IBC, had a low average recovery of **23%**. However, under the **new IBC regime**, the recoveries have **risen to 43%**.

(2) **Shift of focus to 'Resolution' rather than 'liquidation'**- IBC process aims to put the financially ailing corporate entities on their feet through a rehabilitation process. The **primary focus** has shifted to **'saving rather than selling'**.

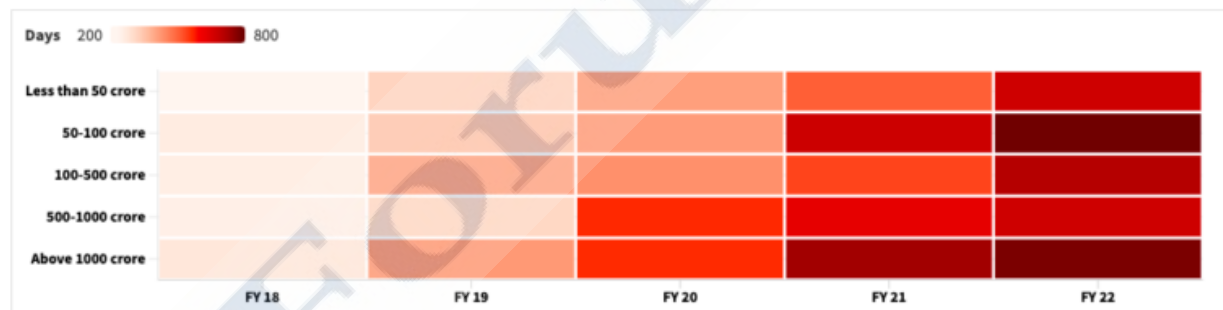
(3) **Shift from 'debtor-in-possession' to 'creditor-in-control'**- The creditor-in-control model hands **control of the debtor to its creditors** and relies upon the managerial skills of a newly appointed management to take over an ailing company and ensure business continuance.

(4) **Improvement in India's global rankings in resolving insolvency**- An IMF-World Bank study in January 2018 observed that **India is moving towards a new state-of-the-art bankruptcy regime**. Since enactment of the Insolvency and Bankruptcy Code, India significantly improved its 'Resolving Insolvency' ranking to **108 in 2019 from 134 in 2014**, where it remained stagnant for several years. **India** won the **Global Restructuring Review award** for the most improved jurisdiction in 2018.

(5) **Stability of Indian financial systems**- The SC in **Swiss Ribbons Vs Union of India**, has held that the core objective of the Insolvency and Bankruptcy Code, is to ensure revival and continuation of the corporate debtor. Insolvency and Bankruptcy Code is playing a larger role of **public-welfare** by ensuring the stability of Indian financial systems.

What are the Challenges associated with the Insolvency and Bankruptcy Code 2016?

(1) **Delays in the resolution process**- Resolution and liquidation cases have been taking longer than the mandated time of 330 days. For example- In cases of over Rs 1,000 Crore, the **average resolution time** has risen to **772 days in FY2022** from **274 days in FY2018**.



Source- The Hindu. Shows the time taken for resolution processes to get completed

(2) **Greater liquidation than resolution**- The objective of Insolvency and Bankruptcy Code, was to promote resolution, but it has ironically resulted in more liquidation. This hinders the economic potential of the country. A/c to IBBI, **the number of cases seeing liquidation are three times more than that of resolution**.

(3) **Big Haircuts**- Longer delays in the IBC process, has resulted in larger haircuts, as the value of sick companies tends to diminish at an increasing pace over time. **For instance-** The lenders took a haircut of **83% in Alok Industries case, 90% Reliance Infratel case and 96% in the recent Videocon Group case**.

(4) **Infrastructural Issues and Resource Deficit**- Out of the **25 NCLT benches established across the country**, most of these NCLT benches remain non-operational or partly operational, on account of lack of proper infrastructure or adequate support staff.

(5) **Fear of Vigilance inquires in case of govt lending institutions-** The public sector banks **fear risk-taking in a resolution process**, as low rate of dues recovery in the short term, may subject them to vigilance inquiries and audits. Hence, these public lending institutions focus more on liquidation and safe exit.

(6) **Exclusion of promoters from the resolution process-** There are many cases, where a loan default occur for reasons beyond the control of the promoters. However, IBC has strictly excluded the promoters from the resolution and liquidation process, **despite the promoters not being wilful defaulters**.

(7) **No focus on mediation, settlement and arbitration under IBC-** Globally, a mechanism like the IBC's **corporate insolvency resolution process (CIRP)** is used as a **last-resort measure** after all other alternatives like mediation, settlement and arbitration have been exhausted. However in India, there are no specific provisions for mediation under the IBC.

What should be the way forward to address the challenges under the IBC 2016?

(1) **Address the resource and infrastructure deficit in NCLT-** The NCLT benches must be filled with competent financial professionals, who must use the Insolvency and Bankruptcy Code's platform as a resolution tool instead of recovery tool.

(2) **Promotion of Alternative Dispute Redressal(ADR) Mechanism-** The ADR mechanisms like mediation, arbitration and settlement must be explored first. The insolvency proceedings must be used as a last resort. The **Mediation Act 2023 and the Arbitration Act 2021** are steps in the right direction.

(3) **Protecting the public sector bankers in case of bona-fide resolution decision-** **'Business judgement' rule** that protects the board of directors in many countries for bona-fide decision making must be introduced for public sector banks officials in India.

(4) **Allowing the defaulters who are not wilful ones to bid at NCLT-** The defaulters who are not wilful defaulters and who have no hand in failure of their business should be allowed to take part in the resolution and the liquidation process. For ex- **many businesses failed due to COVID**.

(5) **Proper use of National Asset Reconstruction company-** The NARCL established by the government must be used in resolutions of companies which do not attract many strategic investors. Proper use of NARCL will help in increasing the resolutions and reduce the liquidations.

Above all on average IBC has promoted **faster recoveries and resolutions** as compared to the earlier timeline of five years, six years or more. However, there are some challenges that need to be addressed to resolve corporate distress. Some further amendments like **extending the pre-packaged insolvency resolution process** that was introduced for MSMEs, need to be extended to other firms.

Read More- [Live mint](#)

UPSC Syllabus- GS2- polity- Government Policies and Interventions for Development in various sectors and Issues arising out of their Design and Implementation.

GS 3- Indian Economy and issues relating to Planning, Mobilization of Resources, Growth, Development and Employment.

Digital Public Infrastructure- Explained Pointwise

Introduction

Digital Public Infrastructure (DPI) has been India's most powerful tool, in its endeavour to give social protection to every Indian. India in its G20 presidency showed the world that, Digital Public Infrastructure (DPI) will be an important part of the **international development architecture** of the future. India highlighted its **unique DPI initiatives**, such as digital ID (**Aadhaar**) and Unified payment infrastructure (**UPI**), in the meetings of G20 Digital Economy Working Group (DEWG).

What is Digital Public Infrastructure (DPI)?

Digital Public Infrastructure- DPI is a set of "**shared digital systems**" used to drive development, inclusion, innovation, trust, competition, respect for human rights and fundamental freedoms. (Definition of DPI adopted by the G-20 Framework for Systems of Digital Public Infrastructure)

The concept of Digital Public Infrastructure is not new- Though the term Digital public infrastructure is relatively new, the concept is an old one.

1. **The internet**, powered by common protocols like HTTP, HTML and SMTP, is a prime example of DPI.
2. **Telecom**, with standards like GSM, SMS, CDMA and IEEE 802.11, is another example of DPI.

Three Pillars of DPI- DPI has 3 broad objectives- identity, payments and data management. India, through its India Stack Platform, has become the first country to develop all the three foundational pillars of DPI.

DPI objective	DPI Pillar	India's DPI pillars name
Identity	Digital ID System	Aadhar
Payment	Real-time fast payment system	UPI
Data Management	Consent-based data sharing system	Data Empowerment Protection Architecture (DEPA)

Example of Use of DPI architecture in Finance

India's Modular Open Source Identity Platform (MOSIP)	It helps governments and other user organisations implement a digital, foundational identity system in a cost-effective way. Nations can use MOSIP freely to build their own identity systems.
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What has been the advantage of use of Digital Public Infrastructure in India?

- 1. Address the huge digital divide-** According to NFHS Report, only 57.1% of the male population and 33.3% of the female population have ever used the internet. DPI in India has helped to create a **digital ecosystem** that is accessible, efficient, transparent and empowered citizens to participate in the digital economy.
- 2. Social security cover to vulnerable sections-** DPI has allowed to the government to extend social security coverage of the vulnerable sections. For Ex- **According to The World Bank Group's G2Px initiative report**, linkage of a financial account with an ID or phone number helped the government to roll out cash assistance more quickly during COVID-19.
- 3. Digital Financial Inclusion-** Digital Public Infrastructure has helped to expand financial access to unbanked populations in India. For example- **the use of mobile wallets and digital payment platforms.**
- 4. Increase in Access-** Digital Public Infrastructure has helped to improve access to services for people living in remote areas. For example-**Digital learning platforms** have helped students in rural areas with access to quality education.
- 5. Improved Efficiency, transparency and better service quality-** Digital Public Infrastructure has helped to streamline and automate processes & reduced the time and effort required to access services. For example- **Use of online portals for government services like passport application and income tax filing.**

What are the challenges associated with Digital Public Infrastructure in India?

- 1. Rise in Cyberattacks-** Digital Public Infrastructure has been vulnerable to cyber-attacks which has led to financial losses. For example- **According to State of Application Security Report**, there has been Increase in hacking attacks on online payment gateways and digital wallets in India.
- 2. Data leaks-** Digital Public Infrastructure has raised concerned about data privacy as there has been increased instances of data leaks and thefts. For example- **ICMR data leak.**
- 3. Interoperability challenges-** There is a lack of interoperability among different digital platforms and systems in India, making it difficult for users to access services seamlessly. For example- **Interoperability issues in Indian e-Wallets.**
- 4. Digital Divide and Digital illiteracy-** There is a significant digital divide in India, with many people lacking access to digital infrastructure such as smartphones and internet connectivity. For example- **According to India Inequality report 2022**, only 31 percent of the rural population uses the Internet compared to 67 percent of their urban counterparts

Read more- [As UPI crosses 10 billion transactions-mark, a look at India's key foreign policy sell: Digital public infrastructure](#)

What should be done to improve India's Digital Public Infrastructure further?

- 1. Development of a robust cybersecurity framework-** We must develop a robust cybersecurity framework to ensure the safety of digital assets by leveraging emerging technologies, such as blockchain, artificial intelligence and quantum technology. Ex- **Quantum key distribution (QKD)**.
- 2. Improved internet connectivity and digital literacy promotion-** We must increase internet connectivity speed, expand broadband infrastructure and ensure the availability of affordable internet services in rural areas. We must also promote digital literacy among the general population through training programs and awareness campaigns. Ex- **Early completion of Bharat net program to connect the gram panchayats.**
- 3. Enhanced Collaboration between countries-** India must collaborate with **Brazil, Norway** and other countries which are part of **Digital Public Goods Alliance (DPGA)**. It is necessary for taking strategic decisions related to choice, data portability, interoperability. A new model for digital cooperation needs to be evolved.
- 4. Regulatory regime to avoid monopolisation and digital colonisation:** India needs a strong digital infrastructure and legal framework to benefit from the digital world and prevent digital colonisation. Ex- **Data localisation**

Sources: [The Hindu](#), [The Business Standard](#)

Syllabus: GS 2: Governance – e-governance applications, models, successes, limitations, and potential & GS 3: Economic development – Inclusive growth and issues arising from it.