

April (Week 4)

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Prelims

NATIONAL

Palli in Jammu becomes India's first carbon-neutral panchayat

(Source: [The Hindu](#))

Context: *Palli village in Samba district of Jammu and Kashmir has become the first panchayat in the country to become carbon-neutral, fully powered by solar energy. All its records have been digitised and the benefits of all the Central schemes are available in this village around 17 km from Jammu.*

Details:

- Inaugurating a 500-kilowatt solar plant in Palli, Prime Minister Narendra Modi said while it would take three weeks to move a sarkari file from Delhi to Jammu and Kashmir, this project, with the help of villagers, was completed in a record time of three weeks.
- Referring to the Glasgow Climate Change Conference which he attended last year, Mr. Modi said he was witness to speeches and statements being made during the conference on reducing carbon generation.
- Palli was a major step towards the Glasgow goal of making India carbon-neutral.
- Palli village was also an example of the slogan Sabka prayas (everyone's efforts). "Every household in Palli offered rotis to workers who completed the solar power plant," he added.
- He described Palli as a model panchayat, which is bound to motivate other panchayats in Jammu and Kashmir and the country to become carbon-neutral.

India 3rd highest military spender

(Source: [The Hindu](#))

Context: *World military spending continued to grow in 2021, reaching a record \$2.1 trillion despite the economic fallout of the pandemic, according to new data on global military spending published by the Stockholm International Peace Research Institute (SIPRI).*

Details:

- The five largest spenders in 2021 were the U.S., China, India, the U.K. and Russia, together accounting for 62% of expenditure. The U.S. and China alone accounted for 52%.
- India's military spending of \$76.6 billion ranked third highest in the world. This was up by 0.9% from 2020 and by 33% from 2012.
- Amid ongoing tensions and border disputes with China and Pakistan that occasionally spill over into armed clashes, India has prioritised the modernisation of its armed forces and self-reliance in arms production.
- Stating that military spending in Asia and Oceania totalled \$586 billion in 2021, the report noted that spending in the region was 3.5% higher than in 2020, continuing an uninterrupted upward trend dating back to at least 1989.
- The increase in 2021 was primarily due to growth in Chinese and Indian military spending. Together, the two countries accounted for 63% of total military expenditure in the region in 2021.

- Even amid the economic fallout of the COVID-19, world military spending hit record levels
- Russia increased its military expenditure by 2.9% in 2021, to \$65.9 billion, at a time when “it was building up its forces along the Ukrainian border,” the report pointed out.
- On Ukraine, the report remarked that as it had strengthened its defences against Russia, its military spending “has risen by 72% since the annexation of Crimea in 2014”.
- Spending fell in 2021, to \$5.9 billion, but still accounted for 3.2% of the country’s GDP, it added.

Nutrient Based Subsidy Scheme

(Source: [PIB](#))

Context: *The proposal put forth by the Department of Fertilizers for Nutrient Based Subsidy rates for phosphatic and potassic fertilizers for Kharif season has been approved by the Union Cabinet.*

Details:

- The subsidy assured by the Cabinet for Kharif season will also include indigenous fertilizers through freight subsidy along with additional support for indigenous manufacturing of fertilizers and import of di-ammonium phosphate (DAP).
- With the subsidy on DAP fertilizers by the Union government on a per bag basis, there has been a 50% increase in per bag subsidy. Besides, the government has also decided to further increase the subsidy rate on DAP due to an increase in its international prices.
- This will assist the farmers to access phosphatic and potassic fertilizers at an affordable and reasonable price supporting the agriculture sector.
- The subsidy will be provided for phosphatic and potassic fertilizers on the basis of NBS rates for Kharif season (In India, this season starts in June and ends in October and the crops are sown at the onset of the south west monsoon and are harvested at the end of monsoon) to ensure smooth availability of these fertilizers to the farmers at an affordable price.

MSME Sustainable ZED Certification Scheme

(Source: [PIB](#))

Context: *The Ministry of Micro, Small and Medium Enterprises (MSME) has launched the MSME Sustainable ZED (Zero Defect Zero Effect) certification scheme to boost the MSME ecosystem in the country.*

Details:

- This scheme intends to offer a roadmap to global competitiveness for the MSME sector of India.
- The ZED certification aims to better the productivity and performance along with improving the capability of transforming the mind-set of manufacturers and make them more environment friendly.
- The scheme will function as an extensive drive to assist the MSMEs to adopt Zero Defect Zero Effect practices and will incentivise them for ZED certification, encouraging them to become MSME champions.
- It also aims to reduce wastage, increase productivity, promote environmental consciousness, save energy and natural resources and expand their markets.
- The scheme allows a provision of up to Rs 5 lakhs per MSME and will be made available for handholding and consultancy support for MSMEs under ZED certification.



- The MSMEs can also avail of a number of incentives for ZED certification by states and union territories, financial institutions and can also apply for free certification under the MSME KAWACH (COVID-19 support) initiative.
- Subsidies for MSMEs under ZED Certification:
 - Micro Enterprises – 80% subsidy
 - Small Enterprises – 60% subsidy
 - Medium Enterprises – 50% subsidy
 - There will be an additional subsidy of 10% for the MSMEs owned by Women/SC/ST entrepreneurs or MSMEs in the North East Region/Himalayan region/Region of Left Wing Extremism/ island territories/aspirational districts.
 - 5% subsidy will be given to MSMEs that are a part of the Micro & Small Enterprises – Cluster Development Programme of the Ministry of MSME

India's designation by the USCIRF

(Source: [The Hindu](#))

Context: *In its 2022 Annual report, the United States Commission on International Religious Freedom (USCIRF) has recommended that India be designated a 'Country of Particular Concern' (CPC), i.e., the category of governments performing most poorly on religious freedom criteria. It has also called for "targeted sanctions" on individuals and entities responsible for severe violations of religious freedom by freezing those individuals' or entities' assets and/or barring their entry" into the U.S.*

What is the USCIRF and how is it constituted?

- The USCIRF is an independent, bipartisan body created by the International Religious Freedom Act, 1998 (IRFA) with a mandate to monitor religious freedom violations globally and make policy recommendations to the President, the Secretary of State, and the Congress.
- It is a congressionally created entity and not an NGO or advocacy organisation. It is led by nine part-time commissioners appointed by the President and the leadership of both political parties in the House and the Senate.
- According to the IRFA, commissioners are "selected among distinguished individuals noted for their knowledge and experience in fields relevant to the issue of international religious freedom, including foreign affairs, direct experience abroad, human rights, and international law."

What does a 'Country of Particular Concern' (CPC) designation mean?

- IRFA requires the USCIRF to annually identify countries that merit a CPC designation.
- As per IRFA, CPCs are countries whose governments either engage in or tolerate "particularly severe violations" of religious freedom, which are defined as "systematic, ongoing, egregious violations of the internationally recognized right to freedom of religion".
- The other designation, for less serious violations, is Special Watch List (SWL)

Which other countries have been designated as CPCs?

- For 2022, based on religious freedom conditions in 2021, a total of 15 countries have been recommended for the CPC designation.
- They include India, Pakistan, Burma, China, Eritrea, Iran, North Korea, Pakistan, Russia, Saudi Arabia, Tajikistan, Afghanistan, Nigeria, Syria and Vietnam. Countries recommended for a SWL designation include Algeria, Cuba, Nicaragua, Azerbaijan, Central African Republic, Egypt, Indonesia, Iraq, Kazakhstan, Malaysia, Turkey, and Uzbekistan.

Why does USCIRF want India to be designated as a CPC?

- The USCIRF, in its annual report, states that in 2021, “religious freedom conditions in India significantly worsened.”
- Noting that the “Indian government escalated its promotion and enforcement of policies—including those promoting a Hindu-nationalist agenda—that negatively affect Muslims, Christians, Sikhs, Dalits, and other religious minorities,” the report observed that “the government continued to systemise its ideological vision of a Hindu state at both the national and State levels through the use of both existing and new laws and structural changes hostile to the country’s religious minorities.”
- It highlighted the use of the Unlawful Activities Prevention Act (UAPA) against those documenting religious persecution and violence, detailed the creation of “hurdles against the licensure and receipt of international funding” by religious and charitable NGOs, and observed that “numerous attacks were made on religious minorities, particularly Muslims and Christians, and their neighborhoods, businesses, homes, and houses of worship”.
- It also criticised the spate of fresh anti-conversion legislations, noting that “national, State and local governments demonised and attacked the conversion of Hindus to Christianity or Islam.”
- Taking into account all these aspects, it concluded that India met the criteria of “systematic, ongoing, egregious” violations of religious freedom and therefore deserved a CPC designation.

Are USCIRF recommendations binding on the U.S. government?

- No, they are not. The USCIRF typically recommends more countries for a CPC label than the State Department will designate.
- This happens because the USCIRF is concerned solely with the state of religious freedom when it makes a recommendation, but the State Department and its Office of International Freedom (IRF), although mandated by IRFA to factor in religious freedom in the framing of foreign policy, also takes into account other diplomatic, bilateral and strategic concerns before making a decision on a CPC designation.

Is this the first time India is being designated as a CPC by the USCIRF? What has been India’s reaction?

- This is the third year in a row that India has received a CPC recommendation. India has in the past pushed back against the grading, questioning the locus standi of USCIRF. In 2020,
- External Affairs Minister S. Jaishankar called the Commission an “Organisation of Particular Concern.”

What is the likely impact of the USCIRF’s recommendation?

- The U.S. State Department hasn’t acted on such recommendations so far.
- But India may come under greater pressure this time, given its divergence from the American position on the Ukraine war and refusal to endorse U.S.-backed resolutions against Russia at the UN.
- While the USCIRF’s suggestion of targeted sanctions may be a non-starter, its other recommendation—that the “U.S. Congress should raise religious freedom issues in the U.S.-India bilateral relationship and highlight concerns through hearings, briefings, letters and congressional delegations” seems more likely to fructify.

Section 144 CrPC

(Source: [Indian Express](#))

Context: The administration of Uttarakhand’s Haridwar district imposed prohibitory orders under Section 144 of the Code Of Criminal Procedure (CrPC), 1973 in an area upto 5 km around a village called Dada Jalalpur near the town of Roorkee. Section 144 was invoked after the Supreme Court instructed the Uttarakhand government to give a commitment that there would be no “untoward situation” or



“unacceptable statements” during a mahapanchayat that had been planned by Hindu religious leaders in the village. Incendiary speeches against Muslims have been made by Hindu religious leaders at such gatherings previously, including one organised in Haridwar in December last year.

Section 144 of the CrPC

- This colonial-era law, which has been retained in the Code, empowers a district magistrate, a sub-divisional magistrate, or any other executive magistrate empowered by the state government, to issue orders to prevent and address urgent cases of apprehended danger or nuisance.
- The written order by the officer may be directed against an individual or individuals residing in a particular area, or to the public at large.
- In urgent cases, the magistrate can pass the order without giving prior notice to the individual targeted in the order.

Powers under the provision

- The provision allows the magistrate to direct any person to abstain from a certain act, or to pass an order with respect to a certain property in the possession or under the management of that person.
- This usually means restrictions on movement, carrying arms, and unlawful assembly. It is generally understood that an assembly of three or more people is prohibited under Section 144.
- When aimed at restricting a single individual, the order is passed if the magistrate believes it is likely to prevent obstruction, annoyance or injury to any lawfully employed person, or a danger to human life, health or safety, or a disturbance of the public tranquility, or a riot, etc.
- Orders passed under Section 144 remain in force for two months, unless the state government considers it necessary to extend it. But in any case, the total period for which the order is in force cannot be more than six months.

Criticism of Section 144

- Affected parties have often argued that the section is sweeping, and allows the magistrate to exercise absolute power unjustifiably.
- Under the law, the first remedy against the order is a revision application that must be filed to the same officer who issued the order in the first place.
- An aggrieved individual can file a writ petition in the High Court if their fundamental rights are affected by the order.
- However, aggrieved individuals argue that in many cases those rights would have already been violated by the state even before the High Court has intervened.
- It has also been argued that imposing prohibitory orders over a very large area — such as was done in all of Uttar Pradesh during the protests against the Citizenship (Amendment) Bill — is not justified because the security situation differs from place to place and cannot be dealt with in the same manner.

Courts rulings on Sec 144

- While challenges were mounted against the use of the provision in the pre-Independence era as well (for example in ‘Re: Ardeshir Phirozshaw ... vs Unknown (1939)’), the first major challenge in the Supreme Court came in 1961 in ‘Babulal Parate vs State of Maharashtra and Others’.
- A five-judge Bench of the Supreme Court refused to strike down the law, saying it is “not correct to say that the remedy of a person aggrieved by an order under the section was illusory”.
- In 1967, the court rejected a challenge to the law by the socialist leader Dr Ram Manohar Lohia, saying “no democracy can exist if ‘public order’ is freely allowed to be disturbed by a section of the citizens”.
- In another challenge in 1970 (‘Madhu Limaye vs Sub-Divisional Magistrate’), a seven-judge Bench headed by then Chief Justice of India M Hidayatullah said the power of a magistrate under Section 144 “is not an ordinary power flowing from administration but a power used in a judicial manner and which can stand further judicial scrutiny”.



- The court, however, upheld the constitutionality of the law, ruling that the restrictions imposed through Section 144 are covered under the “reasonable restrictions” to the fundamental rights laid down under Article 19(2) of the Constitution. The fact that the “law may be abused” is no reason to strike it down, the court said.
- In 2012, the Supreme Court criticised the government for using Section 144 against a sleeping crowd in Ramlila Maidan. “Such a provision can be used only in grave circumstances for maintenance of public peace. The efficacy of the provision is to prevent some harmful occurrence immediately. Therefore, the emergency must be sudden and the consequences sufficiently grave,” the court said.

The iRAD

(Source: [Indian Express](#))

Context: *Dharam Pal, UT Adviser to the Administrator, launched the Integrated Road Accident Database (iRAD) project in Chandigarh. iRAD is an initiative of the Ministry of Road Transport and Highways (MoRTH), with an objective to improve road safety in the country.*

What is iRAD?

- The iRAD application is an initiative of the MoRTH to capture relevant details about the accident prone areas throughout India.
- The main idea behind it is to create a Centralised Accident Database to host and access all accident related data by various departments/stakeholders.
- The details include causes of road accidents, road engineering defaults, negligences on the part of individuals, pattern in accidents and to form a strategy to reduce the number of accidents
- The iRAD was proposed in 2019 but due to Covid-19, the implementation work was postponed.
- In February this year, a beta version of iRAD was launched in at least 59 districts of six states including Madhya Pradesh, Maharashtra, Karnataka, Rajasthan, Tamil Nadu and Uttar Pradesh. With iRAD, any investigation officer visiting the spot of an accident will enter all details in the app, such as day and time of the accident, type of collision, fatal/non fatal, weather conditions, etc.
- The data will further be used by all concerned departments to analyse cause of accidents and formulation of strategies such as identification and rectification of blackspot, engineering interventions, etc.
- iRAD is a feedback based system. Police, transport, road engineering/highway and health are stakeholders in this project.
- Every stakeholder and department has its defined work within the system.
 - For instance, the police is responsible for visiting the spot, counting the number of accidents, etc., analysing the vehicle volume/pressure on a particular stretch is the task of the transport department.
 - Road engineering wing will look after the engineering faults responsible for accidents.
 - Health department will maintain a record of casualties including fatal, non-fatal in road accidents.

The Hattis of Himachal Pradesh

(Source: [Indian Express](#))

Context: *Himachal Pradesh Chief Minister Jai Ram Thakur said that Union Home Minister Amit Shah had assured him that the Centre **would consider favourably the state government’s request** for inclusion of the*

Hatti community in the list of Scheduled Tribes in the state, and that the state government would complete all the formalities required for getting tribal status for the 3 lakh-strong community.

Who are the Hattis?

- The Hattis are a close-knit community who got their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called 'haat' in towns.
- The Hatti community, whose men generally don a distinctive white headgear during ceremonies, is cut off from Sirmaur by two rivers called Giri and Tons.
- Tons divides it from the Jaunsar Bawar area of Uttarakhand. The Hattis who live in the trans-Giri area and Jaunsar Bawar in Uttarakhand were once part of the royal estate of Sirmaur until Jaunsar Bawar's separation in 1815.
- The two clans have similar traditions, and inter-marriages are commonplace. There is a fairly rigid caste system among the Hattis — the Bhat and Khash are the upper castes, while the Badhois are below them. Inter-caste marriages have traditionally remained a strict no-no.
- Due to topographical disadvantages, the Hattis living in the Kamrau, Sangrah, and Shilliai areas lag behind in education and employment.
- The Hattis are governed by a traditional council called Khumbli, which like the khaps of Haryana, decide community matters. The Khumbli's power has remained unchallenged despite the establishment of the panchayati raj system.

INTERNATIONAL

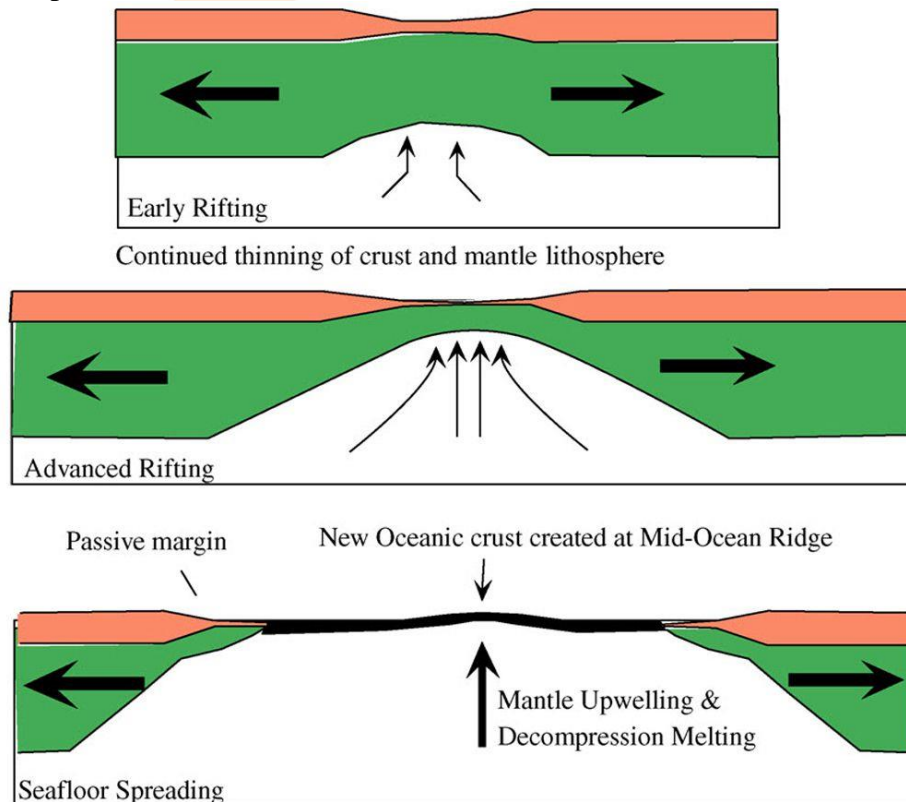
Seafloor spreading

(Source: [Down to Earth](#))

Context: *Seafloor spreading rates have slowed down by roughly 35 per cent globally, according to a study that analysed data from the last 19 million years. Growing mountains might be one of the factors driving the slowdown, the analysis found.*

Details:

- Seafloor spreading is a geological process that creates crusts, the outermost shell of Earth. Tectonic plates separate, allowing magma from the earth's interior to fill the gap in this phenomenon.
- The magma cools to form a new oceanic crust. These activities occur along mid-ocean ridges — large mountain ranges rising from the ocean floor.
- Determining the rate is crucial because seafloor spreading influences sea level and carbon cycle, the study published in the journal *Geophysical Research Letters* noted.
- For example, faster rates mean more volcanic activity, which injects greenhouse gases into the atmosphere, the experts remarked.



- A lot about the sea remains a mystery. “We know more about the surfaces of some other planets than we do our own seafloor,” Colleen Dalton, a geophysicist at Brown University who led the study, said in a press statement by the university.
- So, researchers selected 18 of the world's largest spreading ridges for this study. By studying magnetic records in the rocks on the oceanic crust, they calculated how much oceanic crust had formed over the last 19 million years.



- Basalt rocks on the oceanic crust contain magnetic properties. Their magnetism is influenced by the Earth's magnetic field when the magma reached the surface and began cooling to form the crust, researchers found.
- But the records are incomplete. This is because the crusts, according to the analysis, get destroyed at subduction zones, a point where two tectonic plates collide, causing one of them to sink into the Earth's mantle beneath the other plate.
- Their analysis of the preserved magnetic records showed that the seafloor is spreading at rates of around 140 millimetres per year, down from around 200 millimetres per year just 15 million years ago in some places.
- But not all ridges moved alike: Some sped up while others almost slowed down. The effects were particularly pronounced at ridges along the eastern Pacific. Some ridges in the region were roughly 100 millimetres per year slower compared to 19 million years ago, lowering the world's average.
- The researchers suspect that the factor driving the slowdown could be located in subduction zones rather than the ridges.
- For example, as the Andes — where the Nazca oceanic plate is sinking beneath the South American continental plate — grows, it causes the Earth's crust to shorten and thicken. The rapidly growing range could be slowing the seafloor spreading along the ridges, the researchers explained.
- Mountain building has contributed to a slowdown in spreading at the ridges, Dietmar Muller, professor of Geophysics at the University of Sydney, who was not involved in the study, told *Down To Earth*.
- About 200 million years ago, he explained, when the supercontinent Pangea started breaking, there weren't any major plate collisions or related mountain chains. The continents were fairly flat back then, he added.
- As Pangea progressively broke apart, new ocean basins formed, Muller highlighted. Eventually, the widely fragmented continents started running into each other.
- This happened, for instance, between India and Eurasia, the Arabian Peninsula and Eurasia as well as Africa and Eurasia, he said.
- "This is a natural consequence of a 'mature' stage of supercontinent breakup and dispersal," he added.
- However, Dalton pointed out that this might not be the only contributing factor. Changes in mantle convection could also be playing a role, she said. Mantle convection transports heat from the earth's interior to the surface.

Hepatitis outbreak in children around the world

(Source: [Indian Express](#))

Context: *A series of unexplained cases of Hepatitis B in children has taken over the world. Many countries including the US and UK reported mysterious cases of a few children being diagnosed with Hepatitis B. From January till now, several cases of Hepatitis B positive children have come forward and the doctors are constantly being urged to identify the reason behind this outbreak.*

What is Hepatitis B?

- Hepatitis B is an infection in the liver which happens because of the Hepatitis B virus or HBV. The virus usually spreads through blood, semen or other body fluids.
- It can be prevented or protected against through vaccination. When it is acute, the virus lasts a small time and doesn't always necessarily need treatments although it can get serious and lead to life-threatening diseases like organ scarring, liver failure and even cancer.



- The most common symptoms of Hepatitis B are jaundice, fever, fatigue that lasts for weeks or even months, vomiting, loss of appetite, and pain in joints or belly.
- There is a fair chance that the symptoms are not visible for one to six months since you catch the virus.

What do we know so far?

- The World Health Organization (WHO) said the extent of the outbreak is such that at least 169 cases were recorded of children being diagnosed with Hepatitis B.
- Most of these cases were found in children as young as one month and up to 16-year-olds. While 17 children required a liver transplant, at least one child had died of the disease, the WHO report said.
- Most of these cases were of acute hepatitis, which causes liver inflammation. The WHO report stated that most of the cases reported symptoms like “abdominal pain, diarrhoea and vomiting preceding presentation with severe acute hepatitis, and increased levels of liver enzymes... and jaundice”.
- One concern that the doctors face is that the viruses found in affected children were not any of the usual viruses that are linked to Hepatitis A, B, C, D, E.
- Instead, Adenovirus, which is a family of viruses that usually cause cold among other symptoms, has been found in at least 74 cases worldwide.

What is adenovirus and how is it leading to Hepatitis B in children?

- Adenovirus is a group of viruses that commonly cause cold or flu-like symptoms, fever, sore throat, acute bronchitis, pneumonia, conjunctivitis, acute inflammation of the stomach, diarrhoea, vomiting, nausea and stomach pain.
- Adenovirus is known to spread from one person to another through close contact, coughing, sneezing and even by touching an object containing adenovirus and then further touching the mouth, nose or eyes.
- Type 41 adenovirus is suspected of causing Hepatitis B in children. While there are more than 50 types of adenoviruses, it is type 41 that causes diarrhoea, vomiting and fever along with respiratory problems.
- In a statement, WHO said: “Adenoviruses are common pathogens that usually cause self-limited infections. They spread from person-to-person and most commonly cause respiratory illness, but depending on the type, can also cause other illnesses such as gastroenteritis (inflammation of the stomach or intestines), conjunctivitis (pink eye), and cystitis (bladder infection).”
- WHO added, “While there have been case reports of hepatitis in immunocompromised children with adenovirus infection, adenovirus type 41 is not known to be a cause of hepatitis in otherwise healthy children.”

Self-replicating mRNA Covid-19 vaccines

(Source: [Indian Express](#))

Context: A self-amplifying mRNA vaccine — one in which the delivered RNA multiplies inside the body — has shown promising results against Covid-19 in ongoing phase 1/2/3 trials. The vaccine, ARCT-154, has been developed by Arcturus Therapeutics Holdings, based in San Diego, California, and its trials are in progress in Vietnam. It offered 95% protection against severe Covid-19 and death, and 55% against Covid infection, Arcturus said in a press release.

WHAT IT MEANS?

- An mRNA vaccine, such as those from Pfizer/BioNTech and Moderna, use messenger RNA that encodes the spike protein of the coronavirus.
- In other words, the mRNA directs the cell to produce copies of the spike protein, so that the immune system will recognise the spike if and when actual infection takes place, and mount a response.
- A self-amplifying mRNA vaccine is an improvement on the traditional RNA platform.



- It encodes four extra proteins in addition to the vaccine antigen, and these enable amplification of the original strand of RNA once inside the cell. The basic advantage is that it requires a smaller dose.

Cost disease

(Source: [The Hindu](#))

Context: *Cost disease also known as Baumol's cost disease, refers to the increase in the wages of certain labourers even though their productivity or skill level has not risen commensurately.*

Details:

- This happens because there is competition between various industries for the limited supply of labour.
- So, even if the productivity of their employees has not risen significantly, employers in many cases have no choice but to pay higher wages in order to prevent the movement of labourers to other higher-paying industries.
- It should be noted that labour is often a kind of non-specific resource that can be used across various industries.
- Let's take the case of an agricultural economy where wages are at a certain level.
 - Now suppose that a manufacturing industry suddenly crops up and bids labour away from the agricultural sector.
 - This will raise the wages of labourers and employers in the agricultural sector will have no choice but to pay higher wages to prevent all their labour from moving into the manufacturing industry.
 - This process of bidding higher wages for labour will continue until wages rise to a certain level at which there are no profits to be made by entrepreneurs in carrying out the arbitrage of labour from the agricultural sector to the manufacturing sector.
 - In the end, the wages of labourers in the agricultural sector would have risen higher than what they were earlier even though there has not been any improvement in the skill levels of agricultural labourers.
 - Higher wages will reflect in the price that consumers will have to pay for agricultural goods and services. Consumers of agricultural products will now have to pay higher prices in order to retain the labour force that is required to produce agricultural products.
- In essence, there is no perfect link between the productivity of labour and wages.
- Even when there is no increase in the skill level of employees in a certain industry, wages of labourers in that industry may rise significantly due to competition among employers of different industries to hire scarce labour.
- This is, however, not to say that productivity has no influence on real wages.
- But the effect of productivity on real wages is on the broader, macroeconomic level: when the productivity of factors of production rises, this leads to an increase in the overall production of goods and services in the economy as a whole, which in turn increases the amount of goods that can be purchased with the wages earned by a labourer.

Origin

- The idea of cost disease was proposed by American economists William J. Baumol and William G. Bowden first in their 1965 paper "On the Performing Arts: The Anatomy of their Economic Problems."
- In this paper the authors studied why the wages of musicians has increased over the centuries even though the productivity of these musicians has not really improved very much over the same time period.

- The idea has been used to explain several other real-life cases where wage movements have not been in tandem with changes in productivity.
- For example, Baumol in a 2012 paper used the idea of cost disease to also explain why healthcare costs in the United States have risen while the cost of computers has dropped over time.
- But the extent to which the cost disease can explain rising costs in certain sectors of the economy is a matter of considerable debate among economists.
- Many economists believe that rising costs in many sectors may simply be due to heavy regulations and other supply-side factors that may be restricting output in these sectors and causing prices to be higher than they would be otherwise.

Generating energy from banana peel

(Source: [The Hindu](#))

Context: *We keep hoping for new and better ways of extracting clean energy from renewable sources. Such as carrots, or maybe bananas — which is indeed what has been achieved by a research group working at the Swiss Federal Institute of Technology in Lausanne. Their version of the banana split involved the splitting of biomass — banana peel, orange peel, coconut shells — by flashes of light emanating from a xenon lamp.*

Appeal of hydrogen

- But before looking at this innovative approach, a few words about what makes hydrogen an attractive energy source.
- Storing large quantities of energy in a modest amount of space is a vital requirement, and hydrogen has an impressive energy storage capacity.
- While classifying fuels in terms of their energy value (also called heating value), the deciding elements are carbon, hydrogen and oxygen. Hydrogen has an energy value that is seven times that of carbon.
- In the burning of wood, carbon and hydrogen are oxidised in a heat-generating reaction, the end products of which are carbon dioxide and water.
- The former is a greenhouse gas, contributing to global warming. Burning of hydrogen gives us only water and heat.
- A smarter way to harness the energy in hydrogen would be to generate electricity with it. This is achieved in a proton exchange membrane fuel cell where, in the presence of a metal catalyst, a hydrogen molecule is split into protons and electrons, with the electrons providing the current output.

Transport vehicles

- Such fuel cells are now used to power a few light passenger transport vehicles in some parts of the world. Unlike electric cars, hydrogen-powered cars have a refuelling time of only about five minutes.
- Commercially available hydrogen-powered cars have fuel tanks that can carry 5-6 kg of compressed hydrogen, with each kilo providing a range of about 100 km (and emitting nine litres of water, mostly as steam).
- The limited popularity of hydrogen as fuel is due to production and distribution restraints. It is safer to handle than domestic cooking gas.
- Industrial-level quantities of Hydrogen gas are used in processes such as the production of ammonia for fertilizers. Over 90% of the world's hydrogen is produced from fossil fuels.
- This brings us back to the search for alternative sources of energy that do not tax the environment. Biomass is a catch-all term for organic waste material of plant and animal origin.



- It is a rich source of both hydrogen and carbon — our dried banana peel has a hydrogen content of 5%, and 33% is carbon. An important goal of all climate change-curbing protocols is to sequester as much carbon as possible — don't let it become a gas.
- The Swiss group uses pyrolysis, wherein organic matter is decomposed using small bursts of intense heat under inert conditions.
- Flashes of irradiation from a xenon lamp provide the heat — a total of 15 milliseconds of irradiation are enough to heat the system to 600 degrees Celsius, and decompose a kilogram of banana peel powder — liberating 100 litres of hydrogen gas.
- This short burst of photothermal energy also produces 330 grams of biochar, a solid residue that is rich in carbon.
- It is worth noting here that if the biomass had been burnt, gaseous carbon would have escaped as carbon monoxide and carbon dioxide. Pyrolysis ensures that carbon remains sequestered as a solid.

Benefits of biochar

- Biochar has other uses too — apart from safekeeping carbon, biochar has several uses in agriculture.
- Agricultural leftovers such as rice husk are a major source of biomass, and the biochar it forms has significant mineral content. Adding it to soil enriches plant nutrients.
- The porous nature of biochar makes it suitable for remediation — the adsorption of toxic substances in polluted soils - thus reducing the potency of contaminants in the soil (Annals Agric. Sci., 2019).
- Biomass, be it from banana peel, or tree bark or poultry manure, thus improves air quality and adds value to agricultural produce — while setting in motion that emission-free car.

China security pact

(Source: [The Hindu](#))

Context: *China's government, on April 19, said that it had signed a security deal with the Solomon Islands. The pact, signed by the two foreign ministers, Wang Yi and Jeremiah Manele, paves the way for China to deploy security forces in the Pacific island nation as well as for the Chinese Navy, which has been rapidly growing its fleet and spreading its reach far from China's shores, to use the island nation's ports. Giving China a strategic foothold in the Pacific, the agreement evoked concern from Australia and the United States, which despatched top officials earlier this week to the Solomon Islands, emerging as the latest flashpoint between the world's two biggest powers.*

Why the Solomon Islands matter

- With a population of less than seven lakh, the chain of hundreds of islands is located near Papua New Guinea in the Pacific Ocean — a politically volatile region that has been at the centre of a long-running diplomatic power struggle between the West and China.
- It was here, in the capital city of Honiara on the island of Guadalcanal, that some of the fiercest battles of World War II were fought between the US and Japanese troops.
- Between the late 1990s and early 2000s, the country was rife with ethnic unrest and military conflict between several armed groups, ultimately resulting in a coup that brought Sogavare to power for the first time.
- With its economy in a state of near-collapse and ethnic clashes still rampant, the Pacific Nation was forced to call in reinforcements to stabilise state affairs.
- In 2003, a multinational Regional Assistance Mission to the Solomon Islands (RAMSI), led by Australia, was established.



- As part of the mission, troops were deployed from Australia and New Zealand and a state of stability was eventually restored.
- But political instability continues to persist, making it difficult for new governments to stick around. Despite attempts by Sogavare to expel the mission, RAMSI managed to remain in the country for well over a decade.
- Just last year, Australia came to the rescue once again when the nation was rocked by a wave of anti-government protests. The country sent peacekeeping forces to quell riots in Honiara, where protestors stormed parliament in a bid to topple PM Sogavare. The two nations formalised a bilateral security treaty in 2017, which allows Australian troops to be deployed in the island nation in the event of an emergency.
- There have been growing concerns about Sogavare's closeness with China in recent years. Soon after he was elected prime minister once again in 2019, he cut the country's long-standing diplomatic relations with Taiwan in favour of China.
- The decision, widely known as 'The Switch', is said to have been one of the first major indications of China's expanding influence in the region, which was traditionally an ally of the US and Australia.
- Sogavare's decision was not popular — several province leaders rejected the switch, and it was also one factor contributing to the riots late last year.
- Some experts have said that the prime minister timed the signing of the security pact in such a way that he will now have China to lean on if protests break out ahead of the upcoming elections, which he has been trying to delay by rewriting the constitution, New York Times reported.

What is in the Solomon Islands-China pact?

- According to a leaked draft of the agreement, Chinese warships will be permitted to dock on the islands. Beijing will now also be able to send security forces "to assist in maintaining social order".
- "We intend to beef up and strengthen our police capability to deal with any future instability by properly equipping the police to take full responsibility of the country's security responsibilities, in the hope we will never be required to invoke any of our bilateral security arrangements," Sogavare explained in Parliament last week, stressing that the deal was "guided by our national interests".
- He has denied allegations that China plans to set up a military base in the country in the long term.

What's in it for China?

- The fierce competition between the West and China has only escalated in the region in recent years, prompting the Western alliance to form a military pact called AUKUS (Australia, UK and the US) to counter Beijing in the Pacific.
- With the new security agreement, China and its army have a foothold in the island nation, which could be significant for blocking vital shipping lanes.
- The agreement could also potentially help China intervene when its foreign investments and diaspora face threats in the region.
- As per the draft, a threat to nearly anything linked to China — from its citizens, to small businesses — could be enough to bring in Chinese troops.
- Over the years, China has entered security and economic pacts with several countries, including Djibouti, Pakistan and Cambodia. China pumps in funds for infrastructural development, while also gaining access to several vital ports.

Kuril Islands

(Source: [The Hindu](#))

Context: *The Russian invasion of Ukraine seems to have brought to the forefront some other disputes that Russia has with the West's allies. On April 22, Japan's Diplomatic Bluebook for 2022 described the Kuril Islands (which Japan calls the Northern Territories and Russia as the South Kurils) as being under Russia's "illegal occupation". This is the first time in about two decades that Japan has used this phrase to describe the dispute over the Kuril Islands. Japan had been using softer language since 2003, saying that the dispute over the islands was the greatest concern in Russia-Japan bilateral ties.*

What are the Kuril Islands/ Northern Territories?

- These are a set of four islands situated between the Sea of Okhotsk and the Pacific Ocean near the north of Japan's northernmost prefecture, Hokkaido.
- Both Moscow and Tokyo claim sovereignty over them though the islands have been under Russian control since the end of World War II.
- The Soviet Union had seized the islands at the end of World War II and by 1949 had expelled its Japanese residents. Tokyo claims that the disputed islands have been part of Japan since the early 19th century.

What lies behind the dispute?

- According to Tokyo, Japan's sovereignty over the islands is confirmed by several treaties like the Shimoda Treaty of 1855, the 1875 Treaty for the exchange of Sakhalin for the Kuril Islands (Treaty of St. Petersburg), and the Portsmouth Treaty of 1905 signed after the Russo-Japanese war of 1904-05 which Japan had won.
- Russia, on the other hand, claims the Yalta Agreement (1945) and the Potsdam Declaration (1945) as proof of its sovereignty and argues that the San Francisco Treaty of 1951 is legal evidence that Japan had acknowledged Russian sovereignty over the islands. Under Article 2 of the treaty, Japan had "renounced all right, title and claim to the Kuril Islands."
- However, Japan argues that the San Francisco Treaty cannot be used here as the Soviet Union never signed the peace treaty. Japan also refuses to concede that the four disputed islands were in fact part of the Kuril chain.
- In fact, Japan and Russia are technically still at war because they have not signed a peace treaty after World War II. In 1956, during Japanese Prime Minister Ichiro Hatoyama's visit to the Soviet Union, it was suggested that two of the four islands would be returned to Japan once a peace treaty was signed.
- However, persisting differences prevented the signing of a peace treaty though the two countries signed the Japan-Soviet Joint Declaration, which restored diplomatic relations between the two nations.
- The Soviet Union later hardened its position, even refusing to recognise that a territorial dispute existed with Japan. It was only in 1991 during Mikhail Gorbachev's visit to Japan that the USSR recognised that the islands were the subject of a territorial dispute.



THE HINDU
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The Kuril Islands kerfuffle between Russia and Japan

Post Russia's invasion of Ukraine, Japan has elevated its claim over the Kuril Islands which is currently under the control of Russia. On April 22, Japan's Diplomatic Bluebook for 2022 described the Kuril Islands as being under Russia's "illegal occupation."



HISTORY OF THE KURIL DISPUTE

■ **1855:** The **Treaty of Shimoda** gives southern Kurils to Japan and rest of the island chain to Russia. Sakhalin Island to be under joint administration

■ **1875:** The **Treaty of St. Petersburg** cedes all Kurils to Japan in exchange for Russian jurisdiction over Sakhalin

■ **1905:** After Russia's defeat in the **Russo-Japanese War**, Japan gains control of southern Sakhalin

■ **1945:** The Soviet Union occupies the entire Kuril chain and southern Sakhalin after declaring war on Japan during the final days of **World War II**

■ **1951:** Japan renounces claim to Kurils in the **Treaty of San Francisco**, signed between Japan and the Allied powers. The Soviet Union does not sign, and Japan later claims that the four southern islands are not part of the Kuril chain



■ **1956:** The **Soviet-Japanese Joint Declaration** restores diplomatic ties between the two countries. The Soviet Union agrees to cede islands of Shikotan and Habomai to Japan after signing of formal peace treaty. Japan claims territorial rights to all four southern islands, so no agreement is signed

Sources: Stratfor, wire agencies

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Have there been attempts at resolution?

- Since 1991, there have been many attempts to resolve the dispute and sign a peace treaty.
- The most recent attempt was under Prime Minister Shinzo Abe when joint economic development of the disputed islands was explored. In fact, both countries had agreed to have bilateral negotiations based on the 1956 Japan-Soviet Joint Declaration.
- Russia was even willing to give back two islands, the Shikotan Island and the Habomai islets, to Japan after the conclusion of a peace treaty as per the 1956 declaration.
- Japan's attempt to improve ties with Russia was driven by its need to diversify energy sources and Russia by its need to diversify its basket of buyers and bring in foreign investments. But nationalist sentiments on both sides prevented resolution of the dispute.





Mains

GS II

Understanding the Olga Tellis judgment

(Source: [Indian Express](#))

Context: A 37-year-old Constitution Bench judgment of the Supreme Court which held that pavement dwellers are different from trespassers may become a game-changer in the Jahangirpuri case. The apex court ruled that pavement dwellers live on “filthy footpaths out of sheer helplessness” and not with the object of offending, insulting, intimidating or annoying anyone. They live and earn on footpaths because they have “small jobs to nurse in the city and there is nowhere else to live.”

What is the Olga Tellis judgment?

- The judgment, Olga Tellis vs Bombay Municipal Corporation, in 1985 by a five-judge Bench led by then Chief Justice of India Y.V. Chandrachud agrees that pavement dwellers do occupy public spaces unauthorised. However, the court maintained they should be given a chance to be heard and a reasonable opportunity to depart “before force is used to expel them.”
- The Supreme Court reasoned that eviction using unreasonable force, without giving them a chance to explain is unconstitutional.
- Pavement dwellers, too, have a right to life and dignity. The right to life included the right to livelihood.
- They earn a meagre livelihood by living and working on the footpaths. A welfare state and its authorities should not use its powers of eviction as a means to deprive pavement dwellers of their livelihood.

What led to the judgment?

- Sometime in 1981, the State of Maharashtra and the Bombay Municipal Corporation decided that pavement and slum dwellers in Bombay city should be evicted and “deported to their respective places of origin or places outside the city of Bombay.”
- Some demolitions were carried out before the case was brought to the Bombay High Court by pavement dwellers, residents of slums across the city, NGOs and journalists.
- While they conceded that they did not have “any fundamental right to put up huts on pavements or public roads”, the case came up before the Supreme Court on larger questions of law.

What were the questions discussed before the Supreme Court?

- One of the main questions was whether eviction of a pavement dweller would amount to depriving him/her of their livelihood guaranteed under Article 21 of the Constitution.
- The Article mandates that “no person shall be deprived of his life or personal liberty except according to procedure established by law.”
- The Constitution Bench was also asked to determine if provisions in the Bombay Municipal Corporation Act, 1888, allowing the removal of encroachments without prior notice, were arbitrary and unreasonable.
- The Supreme Court also decided to examine the question whether it was constitutionally impermissible to characterise pavement dwellers as trespassers.

What was the State government’s defence?

- The State government and the corporation countered that pavement dwellers should be estopped (estoppel is a judicial device whereby a court may prevent or “estop” a person from making assertions).



- Estoppel may prevent someone from bringing a particular claim) from contending that the shacks constructed by them on the pavements cannot be demolished because of their right to livelihood.
- They cannot claim any fundamental right to encroach and put up huts on pavements or public roads over which the public has a 'right of way.'

How did the Supreme Court rule?

- The Bench threw out the government's argument of estoppel, saying "there can be no estoppel against the Constitution."
- The court held that the right to life of pavement dwellers were at stake here. The right to livelihood was an "integral component" of the right to life. They can come to court to assert their right.
- "If the right to livelihood is not treated as a part of the constitutional right to live, the easiest way of depriving a person of his right to life would be to deprive him of his means of livelihood to the point of abrogation... Any person who is deprived of his right to livelihood except according to just and fair procedure established by law, can challenge the deprivation as offending the right to life," the Constitution Bench observed.
- Again, on the second question whether provisions in law allowing statutory authorities to remove encroachments without prior notice was arbitrary, the court held that such powers are designed to operate as an "exception" and not the "general rule."
- The procedure of eviction should lean in favour of procedural safeguards which follow the natural principles of justice like giving the other side an opportunity to be heard.
- The right to be heard gives affected persons an opportunity to participate in the decision-making process and also provides them with a chance to express themselves with dignity, the court had observed.
- Finally, the court emphatically objected to authorities treating pavement dwellers as mere trespassers. "They (pavement dwellers) manage to find a habitat in places which are mostly filthy or marshy, out of sheer helplessness. It is not as if they have a free choice to exercise as to whether to commit an encroachment and if so, where. The encroachment committed by these persons are involuntary acts in the sense that those acts are compelled by inevitable circumstances and are not guided by choice," the Supreme Court had reasoned. Besides, the court noted, even trespassers should not be evicted by using force greater than what is reasonable and appropriate. What is more, the court had said, a trespasser "should be asked and given a reasonable opportunity to depart before force is used to expel him."

Resolution of the Arunachal-Assam border dispute

(Source: [The Hindu](#))

Context: Less than a month after the Union government gave the seal of approval to an agreement to partially resolve the disputed sectors on the Assam-Meghalaya border, Arunachal Pradesh Chief Minister Pema Khandu and his Assam counterpart Himanta Biswa Sarma decided to form district-level committees for settling their inter-state boundary disputes. This has set the ball rolling for the two States to address the issue on the basis of the "fifty-fifty" or "give-and-take" model Assam and Meghalaya followed for closure of the disputes in six of its 12 troublesome sectors.

Why does Arunachal Pradesh have a boundary dispute with Assam?

- Assam has had boundary disputes with all the north-eastern States that were carved out of it. While Nagaland became a State in 1963, Meghalaya first became an Autonomous State in 1970 and a full-fledged State in 1972.
- Arunachal Pradesh and Mizoram were separated from Assam as Union Territories in 1972 and as States in 1987. None of the new States accepted the "constitutional boundary" that they said was dictated by the partisan administration of undivided Assam without consulting the tribal stakeholders.



- They also claimed that the disputed areas were traditionally under the control of tribal chieftains before Assam, post-India's independence, inherited the “imaginary boundaries” drawn during British rule.
- The issue with Arunachal Pradesh has more to do with a 1951 report prepared by a sub-committee headed by Assam's first Chief Minister, Gopinath Bordoloi.

What is the genesis of the dispute?

- Arunachal Pradesh and Assam have disputes at about 1,200 points along their 804 km boundary. The disputes cropped up in the 1970s and intensified in the 1990s with frequent flare-ups along the border.
- However, the issue dates back to 1873 when the British government introduced the inner-line regulation vaguely separating the plains from the frontier hills that were later designated as the North-East Frontier Tracts in 1915.
- This area became the North-East Frontier Agency (NEFA) in 1954, three years after a notification based on the 1951 report saw 3,648 sq. km of the “plain” area of Balipara and Sadiya foothills being transferred to the Darrang and Lakhimpur districts of Assam.
- Arunachal Pradesh has been celebrating its statehood on a grand scale with an eye on China since 1987, but what has been causing resentment is the inability of the people living in the transferred patches to join in the celebration.
- Leaders in Arunachal Pradesh claim the transfer was done arbitrarily without consulting its tribes who had customary rights over these lands. Their counterparts in Assam say the 1951 demarcation is constitutional and legal.

Did the two States try settling the boundary dispute earlier?

- There were several efforts to demarcate the boundary between Assam and NEFA/Arunachal Pradesh between 1971 and 1974.
- To end the stalemate, a high-powered tripartite committee involving the Centre and the two States was formed in April 1979 to delineate the boundary based on Survey of India maps.
- About 489 km of the inter-state boundary north of the Brahmaputra River was demarcated by 1984, but Arunachal Pradesh did not accept the recommendations and staked claim to much of the areas transferred in 1951.
- Assam objected and approached the Supreme Court in 1989, accusing Arunachal Pradesh of “encroachment”. The apex court appointed a local boundary commission in 2006 headed by one of its retired judges.
- In its September 2014 report, this commission recommended that Arunachal Pradesh should get back some of the areas transferred in 1951 besides advising both the States to find a middle path through discussions. This did not work out.

What are the chances of a solution emerging this time?

- The Assam-Meghalaya boundary agreement has raised hopes of the Assam-Arunachal boundary dispute being resolved, especially with the Centre egging the north-eastern States to end their territorial issues once and for all by August 15, 2022, when the country celebrates 75 years of independence.
- Moreover, there is a general belief that the region's sister-States are in a better position to fast-track the resolution since they are ruled by the Bharatiya Janata Party with the same dispensation at the Centre.
- Following the model adopted in the exercise to resolve the dispute with Meghalaya, Assam and Arunachal Pradesh have agreed to form district-level committees that will be tasked with undertaking joint surveys in the disputed sectors to find tangible solutions to the long-pending issue based on historical perspective, ethnicity, contiguity, people's will and administrative convenience of both the States.
- The two States have decided to form 12 such committees involving the districts sharing the boundary. Assam has eight districts touching the boundary with Arunachal Pradesh, which has 12 such districts.

Floundering polio eradication

(Source: [The Hindu](#))

Context: *The recent news of wild poliovirus type 1 (WPV1) in Malawi imported from Pakistan and of polio outbreak in Israel caused by ‘circulating vaccine-derived poliovirus type 3’ (cVDPV3) are visible signs of floundering polio eradication. When a virus in oral polio vaccine (OPV) de-attenuates by mutations, acquiring transmission efficiency and neuro-virulence, it is called cVDPV.*

Details:

- The eradication target, when launched in 1988, was 2000, as “a gift of the twentieth century to the twenty-first”.
- The World Health Organization assumed the task, assigned by unanimous resolution in the World Health Assembly (WHA), the forum of Ministers of Health of all nations.
- The resolution was perfectly timed: Rotary International launched its ‘PolioPlus’ project in 1985, to provide polio vaccines to under-five children of all developing countries before 2005.
- Of the six WHO regions, three — Americas, Europe and Western Pacific — had already independently resolved to eradicate polio in their territories by or before 2000. Incidentally, they achieved the goal more or less on time.
- WHO’s task was essentially confined to the “Southern Arc” of the remaining regions — Africa, Eastern Mediterranean and South East Asia. Having failed the target of 2000, WHO revised it every 4-5 years; now it is 2026, as in the strategy document (<https://bit.ly/38fKrKA>).

WHO’s budget estimate

- There are disturbing aspects of this extraordinarily slow pace. The WHO’s original budget estimate for eradication was about \$5 million, but since 2000, the annual spending is about \$1 billion, raised through Rotary, Gates Foundation and rich country governments.
- A billion dollars is not an insignificant portion of WHO’s annual budget. Countries in the three Southern Arc regions continue the eradication drill, like the curse of Sisyphus. India conducts one annual national and two sub-national pulse immunisation campaigns with bivalent (type 1 and 3) OPV (bOPV) for all children below five years, in addition to routine immunisation with five doses — totalling 10 to 15 doses per child in different States.
- Every paediatric textbook warns that on rare occasions, OPV itself may cause vaccine-associated paralytic polio (VAPP) in vaccinated children (vaccinated VAPP) and unvaccinated child-contacts (contact VAPP). The commonest cause of vaccinated VAPP is type 3 vaccine virus and for contact VAPP, it is type 2.
- These safety problems were known since 1964. For avoiding VAPP, rich countries immunise children with the inactivated polio virus vaccine (IPV), which is completely safe.
- Should economics or ethics guide our choice between IPV and OPV? The low cost of OPV could be fallacious: will overall programme-cost be less for 10-15 doses of OPV, including campaigns, than IPV given through Universal Immunisation Programme (UIP)? We know of no such analysis.

Benefit-risk balance

- Ethics is uncompromising. With SARS-CoV-2 vaccines, benefit-risk balance became widely understood. Against high risk of deaths due to COVID-19, vaccines with rare safety problems, including death, scored well on benefit-risk analysis.
- When the risk of WPV polio was annually two per 1000 pre-school children, and the risk of VAPP in one per 1,50,000 birth cohorts, the benefit was favourable for OPV.
- When the risk of death or paralysis falls low, the benefit-risk ratio reverses — as for COVID-19, so also for polio.

- After WPV-2 was eradicated in 1999, the benefit of type 2 vaccine virus became defunct. The ethical problem of risk without benefit was neglected until cVDPV2 caused several outbreaks, beginning in 2006, forcing the tOPV (trivalent oral polio vaccine) to bOPV switch in 2016.
- WHO experts recommended one dose of IPV at 14 weeks of age to mitigate further risks of cVDPV2 outbreaks. But that was too little too late, as more countries continue with cVDPV2 outbreaks than have WPV type 1.
- After wild virus type 3 was globally eradicated in 2012, vaccine virus type 3 had to be removed for avoiding VAPP. No agency has any right to cause VAPP in the name of eradication, especially after WPV-3 has been eradicated.
- This ethical dilemma remained invisible as VAPP is classified non-polio AFP. In Israel, cVDPV3 emerged and caused the outbreak.
- Only seven children were paralysed, all unvaccinated. The risk of paralysis with WPV-3 is one in 1,000 infected children — so at least 7,000 unvaccinated children were infected. Israel's population is less than 10 million, but ours is 1,400 million.
- The probability of cVDPV3 outbreak is low in India, but on account of our population size of 1,400 million, its impact is likely to be enormous. India must withdraw type 3 and continue monovalent type 1 OPV, which also must be withdrawn after reaching 85-90% coverage with IPV, three doses per child.

Unresolved constitutional cases

(Source: [The Hindu](#))

Context: *N.V. Ramana, the Chief Justice of India, stated that he would discuss with other judges and consider listing, after summer vacations, the petitions challenging the abrogation of Article 370 which stripped Jammu and Kashmir of its special status. In this article dated December 7, 2021, Guatam Bhatia outlines how the Court has left a host of highly significant constitutional cases long-pending and why hearing them is important for the accountability of the judiciary.*

Details:

- During the framing of the Indian Constitution, it was proposed that any petition alleging a breach of fundamental rights by the state ought to be judicially decided within one month.
- While the proposal did not, ultimately, find its way into the text of the Constitution, it nonetheless articulated something of great importance: between the individual and the state, there exists a substantial asymmetry of power.
- While the violation of rights — whether through executive or legislative action — is relatively costless for the state, it is the individual, or individuals, who pay the price, and who must then run from pillar to post to vindicate their constitutionally guaranteed rights.
- Consequently, a Constitution is entirely ineffective if a rights-violating status quo is allowed to exist and perpetuate for months, or even years, before it is finally resolved (and often, by the time resolution comes, it is too late in the day for it to have any practical significance).

Blow to accountability

- This point, of course, is not limited to the violation of rights, but extends to all significant constitutional questions that arise in the course of controversial state action.
- Issues around the federal structure, elections, and many others, all involve questions of power and accountability, and the longer that courts take to resolve such cases, the more we move from a realm of accountability to a realm of impunity.



- In this context, as 2021 draws to a close, a look at the Supreme Court of India's docket reveals a host of highly significant constitutional cases that were long-pending when the year began, and are now simply a year older without any sign of resolution around the corner.
- All these cases involve crucial questions about state power, accountability, and impunity. Consequently, the longer they are left hanging without a decision, the greater the damage that is inflicted upon our constitutional democracy's commitment to the rule of law.

Kashmir, electoral bonds

- What are some of these cases? First, there is the constitutional challenge to the Presidential Orders of August 5, 2019, that effectively diluted Article 370 of the Indian Constitution, and bifurcated the State of Jammu and Kashmir into two Union Territories, controlled by the Centre.
- There is a widespread tendency to view the Kashmir question as having been “settled” after the events of August 5, 2019, with it now being a political impossibility to return to the pre-2019 status quo .
- Regrettably, this tendency seems to have gripped the Court as well in how assiduously it has avoided hearing and deciding the case. But politics aside, the case raises certain fundamental questions about constitutional power and accountability.
 - First, it raises the question of whether the Centre can take advantage of an Article 356 situation in a State — a time when no elected government and Assembly is in existence — to make permanent and irreversible alterations in the very structure of the State itself. The answer will have important ramifications not just for Jammu and Kashmir but for the entire federal structure: India has a long history of the abuse of Article 356 to “get rid of” inconvenient State governments, and a further expansion of the power already enjoyed by the Centre will skew an already tilted federal scheme even further.
 - Second, the case also raises the question of whether, under the Constitution, the Union Legislature has the authority not simply to alter State boundaries (a power granted to it by Article 3 of the Constitution), but degrade a State into a Union Territory (something that has never been done before August 5, 2019). If it turned out that the Union Legislature does have this power, it would essentially mean that India's federal structure is entirely at the mercy of Parliament: Parliament could then, constitutionally, convert India from a union of States to a union of Union Territories, if it so wanted. Needless to say, this — as well — would signal a hugely significant shift in power to the Centre.
- As long as both these questions remain undecided, however, the acts of August 5, 2019 remain presumptively legal, with the prospect that they may well be repeated in other parts of India. For this reason, the Supreme Court's now two-and-a-half-year delay in hearing and answering these questions is unconscionable.
- Another long-pending case is the constitutional challenge to the electoral bonds scheme, that has now crossed four years.
 - The electoral bonds scheme authorises limitless, anonymous corporate donations to political parties, making election funding both entirely opaque to the people, as well as being structurally biased towards the party that is in power at the Centre.
 - In numerous central and State election cycles in the last four years, thousands of crores of rupees have been spent in anonymous political donations, thus impacting not only the integrity of the election process but also the constitutional right of citizens to an informed vote.
 - However, other than two interim orders, the Supreme Court has refused to accord a full hearing to the constitutional challenge.
 - In a few months' time, it will be one full five-year cycle of central and State elections, with the case still awaiting a hearing: another black mark on the Court's record.
- It is important to note that in both these cases, the Supreme Court's inaction is not neutral, but rather, favours the beneficiaries of the status quo . In other words, by not deciding, the Court is in effect deciding — in favour of one party — but without a reasoned judgment that justifies its stance.

Other key cases

- This is also true for a number of other cases pending before the Court. For example, as far back as 2013, the Gauhati High Court held that the Central Bureau of Investigation (CBI) was not established under any statutory authority.
- This verdict was immediately stayed when it was appealed to the Supreme Court, but in the intervening years, it has never been heard.
- Thus, the CBI continues to function — often controversially — despite a judgment by a constitutional court that has found its very existence to be illegal.
- More recently, constitutional challenges to the Citizenship (Amendment) Act (CAA), filed in the immediate aftermath of the legislation's enactment, remain unheard, as do the challenges to the much-criticised Section 43(D)(5) of the Unlawful Activities (Prevention) Act, which makes the grant of bail effectively impossible, and is responsible for the years-long incarceration of several people.
- The challenge to Section 43(D)(5) is perhaps the case that most directly affects civil rights, as the section continues to be applied on a regular basis (most notoriously, in recent times, in the Bhima Koregaon case). And cases of this kind are legion.

It wounds the judiciary

- Apart from benefiting the party that profits from the status quo — which, as we have seen, is invariably the state — judicial evasion of this kind is also damaging for the accountability of the judiciary itself.
- Once a court decides a case, its reasoning — which must, by definition be public — can be publicly scrutinised and, if need be, critiqued. In the absence of a decision, however, while the Court's inaction plays as significant a role on the ground as does its action, there is no judgment — and no reasoning — that the public can engage with. For obvious reasons, this too has a serious impact on the rule of law.
- It must be acknowledged that the responsibility for constituting benches and scheduling cases especially cases that are due to be heard by larger Benches rests solely with the Chief Justice of India (CJI).
- While the three previous CJIs have been criticised for excessive deference to the executive, the current CJI has been on record stressing the importance of the rule of law and the independence of the judiciary.
- One way of demonstrating that in action might be to hear — and decide — the important constitutional cases pending before the Court.

Demolishing the rule of law

(Source: [The Hindu](#))

Context: *In the early hours of April 21, a fleet of bulldozers accompanied by hundreds of policemen descended on Jahangirpuri in northwest Delhi to demolish buildings, petty shops, and the entrance gate of a mosque. Soon after the demolitions started, the Supreme Court in an urgent hearing ordered that “status quo” be maintained until further orders, but the demolition continued for over an hour after the order was passed.*

Details:

- The demolition drive was initiated after the Delhi BJP chief Adesh Gupta wrote to North Delhi Municipal Corporation (NDMC) to demolish the “illegal constructions” of the rioters in Jahangirpuri.
- Communal violence had broken out in the area on April 16 when a Hanuman Jayanti Shobha Yatra, which did not have police permission, clashed with Muslims as it went alongside the mosque.
- This comes on the heels of other incidents, in Khargone in Madhya Pradesh and Khambhat in Gujarat, where processions during Ram Navami led to communal flare-ups, which were followed by the state-directed demolition of homes of the alleged rioters.



- The actions of state and local authorities to bulldoze shops and homes in riot-hit Muslim neighbourhoods citing “illegal encroachment” raises major legal concerns.
- At one level, such actions show a blatant disregard for the due process of law and established judicial precedents regarding evictions.
- At another level, it conveys the cynical use of brute state power for collective punishment undermining the basic tenets of criminal law.

“Illegal encroachments”

- The statement of the NDMC that the demolition was a part of a drive against “illegal encroachments” seems to be a legal smokescreen for its more insidious action.
- The binary of legal and illegal settlements has very little meaning in Delhi, and much of urban India, since a majority of urban residents live on the margins of legality.
- According to the Delhi Economic Survey 2008-09, only about 24% of the city lived in “planned colonies” and the rest lived in informal or unplanned areas ranging from jhuggi jhopdi clusters to unauthorised colonies.
- The Draft Master Plan of Delhi, 2041 also acknowledges the informality that characterises Delhi when it states that such unplanned areas have “emerged as high density, mix-use hubs, providing affordable options for housing, micro, small and medium enterprises”.
- Within the web of such urban informality, people make claims over property through various legal, political, and documentary means.
- Since the 1970s, there have been many waves of regularisation of “unauthorised colonies” initiated by the state. In the run-up to the Delhi Assembly elections in 2020, the Union Government launched the PM-UDAY (Unauthorised Colonies in Delhi Awas Adhikar Yojana) scheme which confers property rights to residents of unauthorised colonies.
- Irrespective of the legal status of the settlement, no public authority can demolish buildings without giving the affected parties a chance to be heard. Neither the Delhi Municipal Corporation Act, 1957 nor the Delhi Development Act, 1957 allows any authority to demolish a permanent building without serving advance notice.
- Section 343 of the Delhi Municipal Corporation Act, 1957, which allows the corporation to order the demolition of buildings, has a proviso which states that “no order of demolition shall be made” unless a notice is served to give the affected person “a reasonable opportunity of showing cause why such order shall not be made”.

Protection against eviction

- Beyond the principles of natural justice, the judiciary has further strengthened the rights of residents against eviction. In *Ajay Maken vs Union of India* (2019), a case concerning the legality of the demolition of Shakur Basti, the Delhi High Court held that no authority shall carry out eviction without conducting a survey, consulting the population that it seeks to evict and providing adequate rehabilitation for those eligible.
- Invoking the idea of the “Right to the City” and the “Right to Adequate Housing” from international law, the court held that slum-dwellers possess the right to housing and should be protected from forced and unannounced eviction.
- The Delhi High Court had earlier in *Sudama Singh vs Government of Delhi* (2010), mandated that the state should comply with fair procedure before undertaking any eviction which got further crystalised in the Delhi Slum & JJ Rehabilitation and Relocation Policy, 2015.
- Drawing from judgments in South Africa, the Delhi High Court in *Ajay Maken* case held that any person who is to be evicted should have a right to “meaningful engagement” with relocation plans.
- In *Occupiers of 51 Olivia Road, Berea Township vs City of Johannesburg*, the Constitutional Court of South Africa had held that public authorities should engage meaningfully and in good faith with the affected groups and the Court facilitated an agreement that ensured affordable and safe accommodation for the occupiers.

- In the case of Ajay Maken too, the final judgment was given only after a Draft Protocol for rehabilitation was drawn up after consultative engagements with stakeholders, including the Shakur Basti residents.
- Given these precedents, before a public authority undertakes any action in Jahangirpuri, it should not only serve notice but also consult those that it seeks to evict.

Rule of the bulldozer state

- The demolition of homes and shops of alleged culprits of communal riots portends the establishment of a perilous bulldozer state that dispenses vengeful majoritarian justice.
- Before taking any punitive action, every accused has to be given a fair trial where both parties provide evidence, and the prosecution has to prove beyond reasonable doubt that the accused committed a crime.
- But under the new rule of the bulldozer state, even before any charges are framed, the executive rather than the judiciary arbitrarily imposes a form of collective punishment upon a whole neighbourhood.
- The state speaks with a forked tongue, claiming that the action is against illegal encroachment while communicating to their intended audience that it was a retributive action.
- The bulldozer itself has now become a symbol of brute state power and a revolting mascot to intimidate minorities. The demolition activities seem to be purposefully done under full media glare to convey the unbridled power of the bulldozer state.
- Worryingly, the new rule of the bulldozer state seems to have some level of public endorsement as the old rule of law takes a back seat. In the midst of such a majoritarian upsurge from the state and society, the rule of law cannot be saved purely through judicial intervention and would need broader political struggles that challenge India's seemingly inexorable descent into tyranny.

India as a democratic superpower

(Source: [The Hindu](#))

Context: *Today, with the world's third largest economy — at least in purchasing power terms — with a vibrant free market, a booming tech sector, a population that's eager to learn and to innovate, a gloriously rumbustious press, and an honest judiciary; with a government that's rapidly closing the infrastructure deficit; and with an openness to the wider world, symbolised by a vast diaspora including 7,00,000 Indian-born Australians, India is no longer the emerging democratic super power that I frequently referenced as Prime Minister.*

'War of national extermination'

- India has emerged as a democratic superpower, more than capable of providing leadership that the world often needs and that America cannot always give.
- These ominous times, that would have seemed almost unthinkable just a few years back, when history had supposedly ended, are India's chance to step up in support of free countries and free people.
- Because make no mistake, this newly minted "no limits" partnership, this new Beijing-Moscow axis, these dictators on the march; unless deterred, or somehow touched for the better, will end what until recently have been the best times ever.
- Russia's latest war has not been provoked by anything Ukraine has done. It is Ukraine's existence as a free and independent country that Russia's ruler objects to. It is a war of national extermination to which no free country can be indifferent.
- And do not think that China is not watching, nursing grievances of its own over its "century of humiliation", determined to take Taiwan, and to demonstrate that China is once more the Middle Kingdom, the world's top country, around which all others must cluster, tremble and obey.



- Australia knows what a world dominated by China would look like, because of the 14 demands publicly made of us in late 2020, that we accept all Chinese investments, Chinese students, cease all criticism of China, and end our alliance with the United States.
- As a fellow member of the Quad, Australia stands with India in resisting Chinese aggression over the line of control in Ladakh.
- That's what Australia has always done: stand with the victims of aggression, from Belgium in the Great War, to Poland in World War II, to the people of East Timor when they sought their independence, to the people of Iraq against Islamic State in my time as PM, and now Ukraine to which Australia was the first country to dispatch heavy armoured vehicles.

Trade as a strategy

- Russia's attack on Ukraine has caused commodity prices to spike and disrupted vital supply lines, for food quite as much as for energy.
- With these dictators set on national glory, everything bends to the power of the state; and trade is just a strategy to be turned on and off like a tap. Almost unavoidably, the world will be more disrupted as countries rethink who can be relied on.
- Prime Minister Narendra Modi grasped this when he withdrew India from the China-led Regional Comprehensive Economic Partnership deal. These times have turned fraught; demanding a re-think of the China-centred globalisation of the past couple of decades — notwithstanding a world that, until very recently, was more free, safer, and richer than ever before.
- As long as China has brutal and hegemonic ambitions, businesses in countries like mine have a patriotic duty not to be dependent on a country that could threaten us. But that's also an opportunity for India, trustworthy trade partner, to substitute for China in fellow democracies' supply chains requiring manufacturing at scale, quality and price.
- India's trade minister Piyush Goyal was right when he said that the new Australia-India trade deal's ambition just to double trade within a decade was too modest. Why shouldn't PM Modi's "make in India" campaign extend to all the consumer lines and the intermediate goods currently made in China?

India's standing in the world

- Especially now that it is clearer that trade can only be free and fair if it is based on the values that democracies largely have in common. For obvious reasons, independent India sometimes kept the West at a distance.
- But now, 75 exemplary years on, with its democracy entrenched, there is no reason for mutual wariness, or for India to be anyone's junior partner. If the free world is to have a leader 50 years hence, that's likely to be India.
- As a country that earned its freedom, most honourably, largely through moral suasion and peaceful protest, through satyagraha, India would know the love and passion that is now moving millions of Ukrainians to risk everything they hold dear for that which they hold dearest of all, freedom itself.
- If there's one country whose traditional friendship with Russia, and whose historic aloofness from power plays, and whose palpable goodwill to all might just get through to the Kremlin and to the ordinary Russians whose lives are also being blighted by this war, it is India.
- To the extent the Russian leader still has a conscience, India is uniquely placed to appeal to it, should it have a go at summoning the better angels of Russia's nature to a new beginning; so that what's now being torn down in spite may yet be rebuilt in spirit of generosity and goodwill.
- Why not exercise the moral leadership, of which India might be more capable than any other country, to urge Russia to give up the territory it has seized? If Russia listens, untold further bloodshed would be averted.
- Even unheeded, being the great power, most ready to put principle before calculation would only enhance India's standing in the world.

Revisiting death penalty jurisprudence

(Source: [The Hindu](#))

Context: On April 22, a Bench of the Supreme Court of India, led by Justice U.U. Lalit, decided to critically examine the routine and abrupt way in which trial judges often impose the death penalty on convicts. The challenge before the Court in the instant case of *Irfan vs State of Madhya Pradesh* was to identify the mitigating circumstances and to ensure a convict-centric approach so that the imposition of capital punishment becomes rarer, fairer, and principled.

Recent verdicts as pointers

- The Court seemed to think that an individualistic approach that examines the social, economic, emotional, and genetic components that constituted the offender rather than the offence, would go a long way in evolving a just and judicious sentencing policy.
- According to the Court, “a ‘one size fit for all’ approach while considering mitigating factors during sentencing should end”.
- The Bench indicated the need for mitigation experts to assist trial courts in reaching a correct conclusion on whether one should be sent to the gallows or not.
- This is a significant development that can radically alter India’s death penalty jurisprudence, by a comprehensive examination of the multi-disciplinary wisdom relating to the crime, the criminal, and the punishment.
- An analysis of the possible reasons to avert the death penalty is reflected in a series of recent verdicts such as *Lochan Shrivastava vs State of Chhattisgarh* (2021) and *Bhagchandra vs State of Madhya Pradesh* (2021). These reasons might include socio-economic backwardness, mental health, heredity, parenting, socialisation, education, etc.

Needed, a different acumen

- According to Section 354(3) in the Code of Criminal Procedure, while imposing the capital punishment, the judge should specify “the special reasons” for doing so. It was in *Bachan Singh vs State of Punjab* (1980) that the Constitution Bench suggested a humane and reformist framework in the matter. It said that the gallows could be resorted to only in the rarest of rare cases, that too when “the alternate option is unquestionably foreclosed”.
- Thus, *Bachan Singh* requires the trial courts not only to examine the gravity of the offence but also the condition and the ‘reformability’ of the accused. The Court, in *Bachan Singh*, refused to declare the death penalty as unconstitutional.
- It, nevertheless, tried to reduce the rigour of capital punishment by trying to do away with the indiscriminate use of the penal provisions. It abundantly implied that no person is indubitably ‘irreformable’.
- It had the effect of practically undoing the death penalty provision, if taken in its letter and spirit. The need to have ‘unquestionable foreclosure’ of ‘alternate option’ (in the matter of punishment, such as life imprisonment) sets the benchmark for the sentencing court very high and even unattainable. This person-centric approach, for its materialisation, needs a different judicial acumen that recognises the convict in her multitudes.
- But the *Bachan Singh* principle was followed more in its breach than in compliance even by the Supreme Court. In *Ravji vs State of Rajasthan* (1995), the Supreme Court said that it is the nature of the crime and not the criminal which is germane for deciding the punishment.
- This is diametrically opposite to what was laid down in *Bachan Singh*. In *Machhi Singh vs State of Punjab* (1983), the Court indicated that inadequacy of other punishments could justify the death penalty.



- This too negated the humanistic liberalism in Bachan Singh. Several other cases also were decided by ignoring the Bachan Singh doctrine, as noted by the Supreme Court itself in Santhosh Kumar Satishbhushan Bariyar vs State of Maharashtra (2009) and Rajesh Kumar vs State (2011).
- The Hindu's Frontline magazine ("A case against the death penalty", issue dated September 7, 2012) had a list of 13 convicts who were directed to be hanged in different reported cases decided by the Supreme Court itself, illegally and erroneously, by discarding the Bachan Singh philosophy.
- This egregious judicial error will have to be kept in mind while the Court revisits the issues related to mitigating factors and individual-centered sentencing policy in the Irfan case. In the process, it may need to consider concrete guidelines for such policy.

Overuse and misuse

- But the Indian experience shows that whenever the Court tries to dilute the harshness of penal provisions by a balancing approach, instead of striking down the provision, the instrumentalities of the state (including the police, the prosecution and the court) continue to overuse or misuse the provisions. The judgment of the top court in Kedar Nath Singh vs State of Bihar (1962) is a case in point.
- The Supreme Court endorsed the validity of the sedition law (Section 124A of the Indian Penal Code) with a rider that it could be invoked only when there is an incitement to violence.
- But the state seldom acts based on interpretation of the law. Many were booked for the charge of sedition since then for mere words, innocent tweets or harmless jokes. The top court is now seriously considering the need to revisit Kedar Nath Singh itself.
- It is true that Bachan Singh did not, in concrete terms, elaborate on the mitigating factors and the methods to gather them to avert the death penalty. Nor did it explain the issues such as burden of proof and standard of proof in detail.
- As argued by Anup Surendranath, Neetika Vishwanath, and Preeti Pratishruti Dash in a recent paper, there could be "gaps within Bachan Singh itself". The point, however, is that going by the Indian experience, it may not be enough to provide clarity with respect to the mitigative elements in the matter of sentencing or the method of invoking them.
- Taking empirical lessons from the fate of Bachan Singh, the Supreme Court may have to now ask the more fundamental question posed and negated in Bachan Singh — the question of the constitutional validity of death penalty. The judiciary needs to learn a lot from history.

The poor are most affected

- In India, as elsewhere, the poor, rather than the rich, are sent to the gallows. The numbers of the uneducated and the illiterate sentenced to death outweigh those who are educated and literate.
- In Williams vs Taylor (2000), the U.S. Supreme Court said that failure of the defence lawyer in highlighting the mitigating factors that could lead to avoidance of capital punishment makes the legal assistance ineffective.
- Therefore, it infringes constitutionally guaranteed rights. In the Indian scenario, the legal assistance received by the poor facing serious charges is far from satisfactory.
- Lack of proper defence results in conviction. And in the matter of sentencing too, the mitigating factors are either not placed before the trial court or not persuaded adequately to convince the trial judge to avoid the death penalty. There is a marked contradiction between the Indian legal plutocracy and the marginalised.

Revisiting the case

- The Court, in the instant case, will have to evolve a legal device for procurement of a comprehensive report dealing with the socio-economic and hereditary backgrounds of the accused from experts in the fields of social work, psychiatry, psychology, anthropology, etc.
- Yet, there could be inherent inequality and arbitrariness in applying the principles because of multiple factors such as failure of the judges, incapacity or backwardness of the parties, inadequacy of defence, deficits in the reports of experts, disparity in practical application of the doctrine, etc.



- As such, there is a possibility for the new juridical device also meeting the unfortunate fate which the Bachan Singh verdict faced.
- Therefore, the true way ahead is not merely to fill up the blanks in Bachan Singh by laying down concrete propositions for assessment of mitigating factors, determination of standard of proof, burden of proof etc.
- The Court may have to revisit Bachan Singh itself in so far as it refused to declare the death penalty as violative of the right to life envisaged under Article 21 of the Constitution. Across the world, 108 nations have abolished death penalty in law and 144 countries have done so in law or practice, according to the Amnesty Report of 2021.
- In the Indian context, where judgmental error is quite frequent and the quality of adjudication is not ensured, what is required is a judicial abolition of death penalty.
- For this, the present matter will have to be referred to a larger Bench, with a view to rectify the foundational omission in Bachan Singh — of not explicitly declaring capital punishment as unconstitutional.





GS III

Energy independence through hydrogen

(Source: [The Hindu](#))

Context: India's Green Hydrogen Policy released on February 17, 2022 has addressed several critical challenges such as open access, waiver of inter-state transmission charges, banking, time-bound clearances, etc., and is expected to further boost India's energy transition.

Details:

- India's per capita energy consumption is about one-third of the global average and one-twelfth of the U.S. Increasing growth and economic prosperity would significantly increase India's energy appetite furthering import dependence.
- This, coupled with volatility in prices, as seen during the Russia-Ukraine crisis and the roller-coaster ride of energy prices from historic lows in 2020 to record highs in 2021, could pose a serious threat to our energy security, accentuating an unequivocal need to strive for energy independence.
- The new age fuel, hydrogen, is touted as India's gateway to energy independence. Hydrogen has a multifaceted role to play in the futuristic energy landscape, be it energy storage, long-haul transport, or decarbonisation of the industrial sector.
- In the long run, two envisioned prominent fuels are hydrogen and electricity. Though both are energy vectors, hydrogen can be stored on a large scale and for a longer duration explicitly affirming its huge potential to become a great balancer to the ever-increasing supply of variable renewable energy. It will complement and accelerate renewables into India's clean energy transition, thereby supporting India's ambitious plan to achieve 500 GW renewable capacity by 2030.

Hydrogen: a game-changer

- Hydrogen has a major role to play in the decarbonisation of India's transport sector. The advantages of fuel cell vehicles over battery electric vehicles are faster fuelling and long-driving range thereby making them ideal for long-haul transportation which is a major constraint with Li-Ion batteries. In the industrial segment, hydrogen can de-carbonise 'hard-to-abate' sectors such as iron and steel, aluminium, copper etc. It is a huge prospect to produce fuels such as methanol, synthetic kerosene and green ammonia.
- India's hydrogen consumption was around 7 Mt in 2020 and according to The Energy and Resources Institute (TERI), it is anticipated to leapfrog to about 28 Mt in 2050.
- Assuming 25% export capacity, we can expect a requirement of 35 Mt by 2050. On the basis of this assumption, we can calculate that India would require a tentative capacity in the range of 192 GW to 224 GW of electrolyzers by 2050, assuming all of it is green hydrogen.
- The global capacity of electrolyzers has just crossed 300 MW in 2021. This signifies that India itself would require an electrolyser capacity of 640 to 750 times the current global capacity, by 2050.
- This would entail an exponential increase in electricity demand of around 1,500 to 1,800 TWh, implying that just for hydrogen production; India would require 110-130% of its current total electricity generation (2020-21) by 2050. Therefore, a road map for rapid growth in demand for electricity, especially from renewables should be prepared.
- Apart from the ever-increasing electricity demand, the high cost of hydrogen manufacturing and water scarcity could also pose a challenge. Production of 1 kg of hydrogen by electrolysis requires around nine litres of water. Therefore, hydrogen project planning should be holistic and targeted in areas that are not water-scarce.

- Creating a hydrogen economy is a chicken and egg problem as consumers seek lower costs which could be possible with scalability and large investments, but for those, producers seek assured demand.
- Hydrogen fulfils the three Es of India's energy road map — energy security, energy sustainability and energy access — and India should strive to seize one more E, viz. economic opportunity so that industry can be encouraged to its full potential.

Five-step strategy

- On the demand side, a five-step strategy should be devised.
 - Firstly, to create an initial demand, a mandate should be given to mature industries such as refining and fertilisers, with adequate incentives.
 - Secondly, industries manufacturing low emission hydrogen-based products inter alia green steel and green cement need to be incentivised by government policies.
 - Thirdly, blending hydrogen with natural gas can act as a big booster shot which can be facilitated by framing blending mandates, regulations and promoting H-CNG stations.
 - Further, to promote FCEVs, hydrogen fuel stations may be planned on dedicated corridors where long-distance trucking is widespread.
 - Lastly, the concept of carbon tariffs needs to be introduced on the lines of European countries.
- On the supply side too, a five-step strategy should be devised.
 - Firstly, investment in R&D should be accelerated to bring its cost at par with fossils.
 - Secondly, Sustainable Alternative Towards Affordable Transportation (SATAT) scheme with a target to produce 15 MMT of compressed biogas could be leveraged by exploring biogas conversion into hydrogen.
 - Thirdly, to commercialise and scale-up nascent technologies, a Viability Gap Funding (VGF) scheme may be introduced for hydrogen-based projects.
 - Further, to secure affordable financing, electrolyser manufacturing and hydrogen projects need to be brought under Priority Sector Lending (PSL).
 - Lastly, since two dominant cost factors for green hydrogen are renewable energy tariffs & electrolyser costs, and India has the advantage of one of the lowest renewable tariffs; the thrust should be on reducing the cost of electrolyzers by implementing the Production Linked Incentive (PLI) scheme. This could help India become a global hub for electrolyser manufacturing and green hydrogen.
- On the transportation front, ammonia, having high energy density could be promoted as a mode of transportation.
- A hydrogen transportation system could also be built on the foundation created for natural gas by using its existing infrastructure. Additionally, hydrogen transportation projects may be integrated with PM Gati Shakti Master Plan.
- Hydrogen could completely transform India's energy ecosystem by shifting its trajectory from an energy importer to a dominant exporter over the next few decades. India could export to projected future import centres like Japan, South Korea, etc.
- With hydrogen, India could lead the world in achieving Paris Agreement's goal to limit global warming to 2°C compared to pre-industrial levels. Hydrogen could lay the foundation of a new India which would be energy-independent; a global climate leader and international energy power.
- In COP 26, Prime Minister Narendra Modi had given a clarion call of panchamrit (five goals), with an ambitious target to achieve Net Zero by 2070. Hydrogen will certainly play a decisive role in India's Net Zero ambition and in making India 'Aatmanirbhar in energy'.

Tackling Strontium: a cyber-espionage group

(Source: [The Hindu](#))

Context: *On April 7, Microsoft said it had disrupted cyberattacks from a Russian nation-state hacking group. The group called 'Strontium' by the software company targeted Ukrainian firms, media organisations, government bodies, and think tanks in the U.S. and the EU. The Richmond-based company took control of seven Internet domains used by the group to launch their attacks after a court order permitted it to seize the infrastructure. In the past, Microsoft had performed 15 similar seizures to take control of over 100 Strontium-controlled domains. Apart from Microsoft, security firms, government agencies and individual researchers have been watching the attack group, which has been active for over one and a half decades deploying different attack methods to target individuals and organisations across multiple sectors globally.*

What is Strontium?

- Strontium, also known as Fancy Bear, Tsar Team, Pawn Storm, Sofacy, Sednit or Advanced Persistent Threat 28 (APT28) group, is a highly active and prolific cyber-espionage group.
- It is one of the most active APT groups and has been operating since at least the mid-2000s, making it one of the world's oldest cyber-spy groups.
- It has access to highly sophisticated tools to conduct spy operations, and has been attacking targets in the U.S., Europe, Central Asia and West Asia.
- The group is said to be connected to the GRU, the Russian Armed Forces' main military intelligence wing.
- The GRU's cyber units are believed to have been responsible for several cyberattacks over the years and its unit 26165 is identified as Fancy Bear.

How does it attack networks?

- The group deploys diverse malware and malicious tools to breach networks. In the past, it has used X-Tunnel, SPLM (or CHOPSTICK and X-Agent), GAMEFISH and Zebrocy to attack targets.
- These tools can be used as hooks in system drivers to access local passwords, and can track keystroke, mouse movements, and control webcam and USB drives.
- They can also search and replace local files and stay connected to the network, according to a report by the U.K. National Cyber Security Centre (NCSC).
- APT28 uses spear-phishing (targeted campaigns to gain access to an individual's account) and zero-day exploits (taking advantage of unknown computer-software vulnerabilities) to target specific individuals and organisations.
- It has used spear-phishing and sometimes water-holing to steal information, such as account credentials, sensitive communications and documents. A watering hole attack compromises a site that a targeted victim visits to gain access to the victim's computer and network.
- For high volume attacks, the group has used Zebrocy, which is also primarily deployed through spear-phishing emails.
- Fancy Bear has also used VPNFilter malware to target hundreds of thousands of routers and network-access storage devices worldwide.
- The infection allows attackers to potentially control infected devices, make them inoperable and intercept or block network traffic, according to NCSC. More recently, a cybersecurity advisory issued by the National Security Agency (NSA) and the Federal Bureau of Investigation (FBI) noted that APT28 deployed a malware called Drovorub, designed for Linux systems.
- When deployed on a victim machine, it provides file download and upload capabilities; execution of arbitrary commands; and implements hiding techniques to evade detection.



Which organisations have been targeted?

- The Democratic National Committee (DNC) hack during the 2016 U.S. presidential election, the global television network TV5Monde cyberattack, the World Anti-Doping Agency (WADA) email leak, and several other high-profile breaches are said to be the work of APT28.
- The DNC was allegedly hacked by Fancy Bear, and documents including emails that were stolen during the cyberattacks were published online. Throughout the campaign, dozens of politicians, DNC staff, speech writers, data analysts, former staff of the Obama campaign, staff of the Hillary Clinton campaign, and even corporate sponsors were targeted multiple times, according to a report by cybersecurity software firm Trend Micro.
- During the same year, Fancy Bear was suspected to be behind the release of confidential medical files relating to many international athletes. WADA stated publicly that this data came from a hack of its anti-doping administration and management system.
- In 2015, the German federal Parliament, Bundestag, was reportedly attacked by Fancy Bear. During the attack, a significant amount of data was stolen and the email accounts of several MPs, as well as then Chancellor Angela Merkel, were affected.
- Later that year, the same group was supposedly responsible for accessing and stealing content from multiple email accounts belonging to a small U.K.-based TV station.

How have governments and security agencies reacted?

- In 2018, a jury indicted 12 Russian nationals in the DNC hack for committing federal crimes that were intended to interfere with the 2016 U.S. presidential election. The convicts were members of GRU.
- Later that year, another jury indicted seven defendants, all officers in the GRU. The conspirators included a Russian intelligence hacking team that travelled abroad to compromise computer networks used by anti-doping and sporting officials.
- In the U.K., the government had announced it would enforce asset freezes and travel bans against two Russian GRU officers and the GRU's unit 26165, responsible for the 2015 cyberattacks on Germany's Parliament.
- Besides, the country's NCSC had issued a detailed technical advisory to assist in detecting the presence of malicious tools used by APT28 on platforms and networks, along with mitigation guidelines for protection against the group's activities.
- In addition to security agencies, software and cybersecurity firms as well as researchers have published detailed reports, describing Fancy Bear's notorious cyberattacks and the tools used in executing them. This is to help and prepare organisations against the persistent cyber threats from APT groups working in association with nation-states.

How quickly can India move away from coal?

(Source: [The Hindu](#))

Context: Tamil Nadu Chief Minister M.K. Stalin wrote to Prime Minister Narendra Modi, requesting him to ensure adequate supply of coal to the power-generating units in the State. In Maharashtra, Deputy Chief Minister Ajit Pawar said the State government planned to import coal to cope with the power crisis. The other top power-consuming State in the country, Gujarat, is also planning to import coal, according to reports. Decline in coal stocks and the resulting power outages in several States have spurred queries of renewable energy's potential to fill in for the conventional resource. Earlier this week, coal stocks in more than 100 thermal power plants in India fell below the critical mark (less than 25% of the required stock) while it was less than 10% in over 50 plants across India. On Saturday, the Minister for Coal and Mines, Pralhad Joshi, said at present 72.5 million tonnes (MT) of coal is available at different sources of Coal India, Singareni Collieries and coal washeries, and 22.01 MT with thermal power plants. "There is

sufficient coal availability in the country, to last over a month, which is being replenished daily with record production,” he tweeted.

Is there a coal crisis?

- Coal accounts for 55% of the country’s energy needs, according to Mr. Joshi. The India Energy Outlook 2021 report of the International Energy Agency (IEA) said energy use in India has doubled since 2000, with 80% of demand still being met by coal, oil and solid biomass. Pandemic-related disruptions, however, prevented the stock-up of coal.
- Mining operations were halted to curb the spread of the virus. Despite the gradual easing into operations, mining activities were hampered during the monsoons, delaying arrival of stocks.
- With household demand for power picking up and the arrival of summer, combined with the sudden acceleration in economic activity, it has resulted in a demand-supply mismatch.
- The country had experienced a similar situation last October, but with peak summer approaching, the coal stock situation is more worrisome now because demand for power will be high. The energy demand will go up as urbanisation and the population increase.
- The IEA estimates that despite the shock from COVID-19, India’s demand is expected to grow by almost 5% a year till 2040.

What is the consumption pattern?

- Coal is abundantly available, has shorter gestation periods and coal-based plants have lower capital costs than hydel and nuclear plants, therefore, making it the most viable enabler of energy security in the country. The conventional resource’s capacity addition is further helped by the increased participation of the private sector in power generation.
- In Washington recently, Finance Minister Nirmala Sitharaman said India’s move away from coal will be hampered by the war in Ukraine. At the recently concluded Budget session, Mr. Joshi said, “Despite push for renewables, [the] country will require base load capacity of coal-based generation for stability and also for energy security.”

Where does India stand on renewable energy sources?

- The report of the Central Electricity Authority on optimal generation capacity mix for 2029-30 estimates that the share of renewable energy in the gross electricity generation is expected to be around 40% by that financial year.
- The Union government has spent ₹3,793 crore until March 14 in 2021-22 for implementing varied renewable energy-related schemes and programmes.
- A total of 152.90 GW of renewable energy capacity has been installed in the country as on February 28, as per government figures. This includes 50.78 GW from solar power, 40.13 GW from wind power, 10.63 GW from bio-power, 4.84 GW from small hydel power and 46.52 GW from large hydel power.
- In accordance with the Prime Minister’s announcement at COP26 (the 2021 United Nations Climate Change Conference), the Ministry of New and Renewable Energy aspires to install 500 GW of electricity capacity from non-fossil fuel sources by 2030.
- In 2020-21, as per the CEA, 1,381.83 billion units (bu) was generated in total, of which renewable energy sources’ share was 297.55 bu — representing 21.5% of the overall generation.
- Up to August 2021, the share stood at 24%. “Over the next 10 years, the strong growth of renewables is not sufficient in the stated policies scenario to keep up with the projected pace of electricity demand growth, and coal-fired power generation makes up the difference...,” the IEA said in its report on India.

What are the challenges?

- The capacity of a plant does not necessarily translate into the actual power it generates for the grid, some of it is lost owing to external factors such as heat or transmission losses. This applies for both renewable and conventional sources.

- Solar and wind energy are variable resources with ‘variability’ being particularly exposed during periods of peak demand. For example, solar energy is abundantly available during daytime in summers.
- However, the domestic consumption peaks in the evenings when we turn on the air-conditioner after returning from work. With no sunlight outside then, energy requirement and supply face a mismatch.
- Another dimension to it is the seasonal variation. In monsoons, solar energy is barely available with wind energy available in abundance.
- Another factor is spatial variability. Regions near coastal areas enjoy more wind and therefore, possess greater ability to produce wind energy, like Gujarat, in comparison to States which are drier and experience more sunlight, like Rajasthan. Use of renewable energy, therefore, would essentially require a balancing act.

What about transmission and storage?

- Transmission and storage are central to addressing variability issues. They help cope with the ‘duck curve’ power demand among consumers in India.
- Resembling a duck, the curve is a graphical representation exhibiting the difference between the demand and availability of energy through the day.
- With both wind and solar being variable sources — it becomes imperative to establish a complementing model. This would require import and export technologies between States as well as optimising the trade between those with differing demand and production profiles.
- “Thermal plants in the eastern region, by contrast, provide flexibility for demand centres to the south and west, which have high industrial and agricultural loads and may call on imports during periods of low renewables availability,” IEA says.

The goal of an energy-secure South Asia

(Source: [The Hindu](#))

Context: South Asia has almost a fourth of the global population living on 5% of the world’s landmass. Electricity generation in South Asia has risen exponentially, from 340 terawatt hours (TWh) in 1990 to 1,500 TWh in 2015.

Details:

- Bangladesh has achieved 100% electrification recently while Bhutan, the Maldives, and Sri Lanka accomplished this in 2019.
- For India and Afghanistan, the figures are 94.4% and 97.7%, respectively, while for Pakistan it is 73.91%.
- Bhutan has the cheapest electricity price in South Asia (U.S.\$0.036 per kilowatt hour, or kWh) while India has the highest (U.S.\$0.08 per kWh.)
- The Bangladesh government has significantly revamped power production resulting in power demands from 4,942 kWh in 2009 to 25,514 MW as of 2022.
- India is trying to make a transition to renewable energy to provide for 40% of total consumption, while Pakistan is still struggling to reduce power shortage negatively impacting its economy.
- The electricity policies of South Asian countries aim at providing electricity to every household. The objective is to supply reliable and quality electricity in an efficient manner, at reasonable rates and to protect consumer interests.
- The issues these address include generation, transmission, distribution, rural electrification, research and development, environmental issues, energy conservation and human resource training.



- Geographical differences between these countries call for a different approach depending on resources. While India relies heavily on coal, accounting for nearly 55% of its electricity production, 99.9% of Nepal's energy comes from hydropower, 75% of Bangladesh's power production relies on natural gas, and Sri Lanka leans on oil, spending as much as 6% of its GDP on importing oil.

Electrification, growth, SDGs

- Given that a 0.46% increase in energy consumption leads to a 1% increase in GDP per capita, electrification not only helps in improving lifestyle but also adds to the aggregate economy by improving the nation's GDP.
- For middle-income countries, the generation of power plays an essential role in the economic growth of the country.
- More electricity leads to increased investment and economic activities within and outside the country, which is a more feasible option as opposed to other forms of investments such as foreign direct investment.
- The South Asian nations have greatly benefited from widening electricity coverage across industries and households. For example, 50.3% of Bangladesh's GDP comes from industrial and agricultural sectors which cannot function efficiently without electricity. Nepal's GDP growth of an average of 7.3% since the earthquake in 2015 is due to rapid urbanisation aided by increased consumption of electricity. On the other hand, Pakistan suffered a drop in industrialisation of textiles by 9.22%, wiping off U.S.\$12.4 billion from the industry in 2014 due to power shortages. India leads South Asia in adapting to renewable power, with its annual demand for power increasing by 6%.
- Solar power-driven electrification in rural Bangladesh is a huge step towards Sustainable Development Goal 7 (which is "Ensure access to affordable, reliable, sustainable and modern energy for all") by 2030 and engaging more than 1,00,000 female solar entrepreneurs in Sustainable Development Goal 5 (which is "achieve gender equality and empower all women and girls").
- India's pledge to move 40% of total energy produced to renewable energy is also a big step. Access to electricity improves infrastructure i.e., SDG 9 (which is "build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation").
- Energy access helps online education through affordable Internet (SDG 4, or "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"), more people are employed (SDG 1: "no poverty"), and are able to access tech-based health solutions (SDG 3, or "ensure healthy lives and promote well-being for all at all ages").

Green growth, green energy

- South Asian leaders are increasingly focused on efficient, innovative and advanced methods of energy production for 100% electrification. Prime Minister Narendra Modi in his 'net zero by 2070' pledge at COP26 in Glasgow asserted India's target to increase the capacity of renewable energy from 450GW to 500GW by 2030.
- South Asia has vast renewable energy resources — hydropower, solar, wind, geothermal and biomass — which can be harnessed for domestic use as well as regional power trade.
- The first-ever Clean Development Mechanism (CDM) benefits such as poverty reduction, energy efficiency and improved quality of life were realised when there was India-Bhutan hydro trade in 2010.
- The region is moving towards green growth and energy as India hosts the International Solar Alliance. In Bangladesh, rural places that are unreachable with traditional grid-based electricity have 45% of their power needs met through a rooftop solar panel programme which is emulated in other parts of the world.
- This is an important step in achieving Bangladesh's nationally determined contributions target of 10% renewable energy of total power production.

Regional energy trade

- The South Asian Association for Regional Cooperation (SAARC) prepared the regional energy cooperation framework in 2014, but its implementation is questionable.

- However, there are a number of bilateral and multilateral energy trade agreements such as the India-Nepal petroleum pipeline deal, the India-Bhutan hydroelectric joint venture, the Myanmar-Bangladesh-India gas pipeline, the Bangladesh-Bhutan-India-Nepal (BBIN) sub-regional framework for energy cooperation, and the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline, rumoured to be extended to Bangladesh.
- 'South Asia's regional geopolitics is determined by the conflation of identity, politics, and international borders. Transnational energy projects would thus engage with multiple social and ideational issues' which is a major limitation for peaceful energy trade.
- If energy trade is linked and perceived through the lens of conflict resolution and peace building, then a regional security approach with a broader group of stakeholders could help smoothen the energy trade process.
- The current participation in cross-border projects has been restricted to respective tasks, among Bhutan and India or Nepal and India. It is only now that power-sharing projects among the three nations, Nepal, India, and Bangladesh, have been deemed conceivable.
- India exports 1,200MW of electricity to Bangladesh, sufficient for almost 25% of the daily energy demand, with a significant amount from the Kokrajhar power plant in Assam worth U.S.\$470 million.
- Bhutan exports 70% of its own hydropowered electricity to India worth almost U.S.\$100 million. Nepal on the other hand, not only sells its surplus hydroelectricity to India but also exported fossil fuel to India worth U.S.\$1.2 billion.

What is needed

- South Asia is reinforcing its transmission and distribution frameworks to cater to growing energy demand not only through the expansion of power grids but also by boosting green energy such as solar power or hydroelectricity.
- Going forward, resilient energy frameworks are what are needed such as better building-design practices, climate-proof infrastructure, a flexible monetary framework, and an integrated resource plan that supports renewable energy innovation.
- Government alone cannot be the provider of reliable and secure energy frameworks, and private sector investment is crucial.
- In 2022, private financing accounted for 44% of household power in Bangladesh, 48.5% in India, and 53% in Pakistan. Public-private partnership can be a harbinger in meeting the energy transition challenges for the world's most populous region.

Can climate change be solved by pricing carbon?

(Source: [Indian Express](#))

Context: As climate change bakes the planet, dozens of nations and many local governments are putting a price tag on greenhouse gas emissions that are increasing flooding, droughts and other costly catastrophes. Pennsylvania on Saturday becomes the first major fossil fuel-producing state in the US to adopt a carbon pricing policy to address climate change. It joins 11 states where coal, oil and natural gas power plants must buy credits for every ton of carbon dioxide they emit.

So what's the price tag?

- The Biden administration's social cost estimate is about \$51, meaning every ton of carbon dioxide spewed from a power plant or tail pipe today is projected to contribute to \$51 in economic damages in coming years.
- The state of New York has its own social cost of carbon, updated in 2020 to \$125 a ton to account for economic trends.

- By contrast, emissions were most recently valued at \$13.50 per ton at auction under the Regional Greenhouse Gas Initiative in the Northeast, which Pennsylvania is joining.
- A similar “cap and trade” emissions program is in place in California, and one is due to go into effect in Washington state in 2023.
- Canada’s carbon taxes include a minimum fuel charge for individuals equivalent to about \$40 per ton.

Why the big differences?

- The social cost of carbon attempts to capture the value of all climate damage, centuries into the future. Carbon pricing reflects how much companies are willing to pay today for a limited amount of emission credits offered at auction.
- In other words, the social cost of carbon guides policy, while carbon pricing represents policy in practice.
- In the most efficient world, economists say the two figures would line up, meaning there would be agreement about what climate change damages will cost and the policies used to address them.

Is any of this working?

- Emissions from northeastern states would have been about 24% higher if the carbon pricing consortium hadn’t been in place, according to researchers from Duke University and the Colorado School of Mines.
- The carbon auctions also have brought in almost \$5 billion that can be used to reduce household energy cost increases and promote renewable energy.
- The consortium began in 2009 — the year of a failed push in Congress to establish a nationwide cap and trade program. The bipartisan proposal died amid arguments over cost and whether climate change was even occurring.
- Following lawsuits from environmentalists, President Barack Obama’s administration crafted the social cost of carbon and began including future damage estimates in cost-benefit analyses for new regulations. It was used under Obama more than 80 times, including for tightened vehicle emissions standards and regulations aimed at shuttering coal plants.
- President Donald Trump moved to roll back many of the Obama-era rules — and to help justify the changes, the Republican administration cut the social cost of carbon from about \$50 per ton to \$7 or less. The lower number included only domestic climate impacts and not global damages.

What’s next?

- On the day Biden took office, he set up an interagency group that revived the Obama estimate and promised a revised figure incorporating previously overlooked consequences of climate change. Many economists expect the revised figure to be higher, perhaps more than double the current \$51.
- Without a nationwide cap and trade program, environmentalists and some economists want the government to be more aggressive in using the social cost of carbon to overhaul government energy policy.
- Under Biden, the U.S. Interior Department for the first time is applying climate damage considerations to oil and gas sales on public lands and waters. An upcoming lease sale in Wyoming, for example, could result in future emissions of 34 million tons (31 million metric tons) of carbon dioxide. That’s equivalent to more than \$1.5 billion in future damages.
- But the agency still plans to sell the leases because officials said there were no “established thresholds” to evaluate whether the increased emissions were acceptable, or not.
- The expansion of carbon pricing into Pennsylvania remains tenuous. A legal challenge is pending and the state’s term-limited Democratic governor could soon be replaced by a successor who opposes the state’s participation.

Indonesia's palm oil export ban

(Source: [The Hindu](#))

Context: *Indonesia, the world's biggest producer, exporter, and consumer of palm oil, will ban all exports of the commodity and its raw materials from April 28 to reduce domestic shortages of cooking oil and bring down its skyrocketing prices, the country's President, Joko Widodo, announced on April 22. The announcement came amid surging global food prices as a consequence of the ongoing Russia-Ukraine conflict. Food prices rose by almost 13% globally in March according to the United Nations. It also coincided with the spring meetings of the World Bank and the International Monetary Fund in Washington D.C., where policymakers raised global food security concerns, emphasising that countries should avoid hoarding food stocks and refrain from exercising export controls.*

How important is palm oil to global supply chains?

- Palm oil is the world's most widely used vegetable oil with its global production in crop year 2020 exceeding 73 million tonnes (MT), according to the United States Department of Agriculture (USDA). Output is estimated to be 77 MT for the current year.
- Made from the African oil palm, it is used as cooking oil, and in everything from cosmetics to processed food to cleaning products.
- The oil palm industry has come under criticism for what are reportedly unsustainable production practices leading to deforestation, and exploitative labour practices carried forward from the colonial era.
- However, palm oil is preferred by many as it is inexpensive; oil palms produce more oil per hectare than other vegetable oil plants. Indonesia and Malaysia together account for almost 90% of the global palm oil production, with Indonesia producing the largest quantity at over 43 MT in the 2021 crop year.
- According to Reuters, palm oil makes up 40% of the global supply of the four most widely used edible oils: palm, soybean, rapeseed (canola), and sunflower oil. Indonesia is responsible for 60% of the global supply of palm oil.

Why are the prices of edible oils rising?

- The prices of palm oil rose this year as demand increased because of the short supply of alternative vegetable oils. The production of soybean oil, the second most-produced oil, is expected to take a hit this year due to a poor end soybean season in major producer Argentina.
- The production of canola oil was hit in Canada last year due to drought; and supplies of sunflower oil, 80-90% of which is produced by Russia and Ukraine, has been badly hit due to the ongoing conflict.
- Consumers across the globe have been bearing the brunt of these factors, with the pandemic driving up global edible oil prices to record highs.
- After Indonesia's unprecedented announcement to ban palm oil exports, global prices of other vegetable oils saw spikes.
- The price of soybean oil on April 22, saw a 4.5% rise, taking it to a record high of 83.21 cents per pound on the Chicago Board of Trade. Soy oil prices have already seen a 50% rise so far this year.

How bad is Indonesia's palm oil crisis?

- Indonesia uses palm oil for cooking purposes. The palm oil used for cooking is made by processing crude palm oil (CPO).
- Due to short supply of alternative vegetable oils, lower-than-expected output from the second-biggest palm oil producer Malaysia due to pandemic-induced labour shortage, the global food inflation linked to the pandemic and the Ukraine crisis, the global prices of CPO had risen significantly since the end of last year.
- The price of CPO rose from an already high rate of \$1,131 per metric tonne in 2021 to its highest ever price of \$1,552 in February this year.



- The global rise affected the price of palm oil in Indonesia, which sells two types of cooking oil — expensive branded cooking oil and cheaper non-branded oil in bulk.
- The country saw the price of branded palm oil go from 14,000 Indonesian rupiah (IDR) per litre in March 2021, to 22,000 IDR in March this year.
- In order to make cooking oil affordable, the Indonesian government introduced price caps in late January; deciding that the MRP of branded oil could not exceed 14,000 IDR, while that of the local product would remain at 11,500 IDR.
- The issue of consumers hoarding the commodity and reports of it being resold, made the government introduce a two-litre-per-person rule for buying cooking oil. Some sellers were inking the fingers of consumers, as done during voting, to ensure that they don't buy twice.
- Amid reports of hoarding of cooking oil by consumers and producers, and producers being discouraged from making more oil owing to the gap between rising global prices and capped prices at home, Indonesia, the biggest palm oil maker, started witnessing an acute shortage of cooking oil.
- To meet domestic demand, the government announced another policy called domestic market obligation (DMO), under which it required CPO exporters to sell 20% of export volume domestically, at a fixed price of 9,300 IDR per kg. This was later increased to 30%.
- These policies, observers said, had an inverse effect on the domestic supply as the price controls and domestic quotas became ineffective amid the global price rise. The government retracted the price caps and export quota in late March but introduced a tax on exports, should the global prices go beyond \$1,500 per metric tonne.
- Indonesian Trade Minister Muhammad Lutfi also accused producers of engaging in illegal hoarding, cartel practices and of acquiring illicit export permits amid the export restrictions. Investigations into both these matters are currently underway in the country.
- The cooking oil shortage could in part also be attributed to Indonesia using large quantities of CPO to make biodiesel, which it has branded as 'green diesel', despite palm oil production being known to be environmentally degrading.
- In late 2019, the country increased the palm oil content to be used in biodiesel to 30%. Reuters reported that it used over seven MT of palm oil out of its total national output of 41.4 MT in 2020, on biodiesel.

How will it impact India?

- India is the biggest importer of palm oil which makes up 40% of its vegetable oil consumption, as per the USDA. India meets half of its annual need for 8.3 MT of palm oil from Indonesia. Last year, the Centre also unveiled its plan to boost India's domestic palm oil production.
- Already grappling with record-high wholesale inflation, the late January export controls exercised by Indonesia had led to a 38% rise in the landed cost of CPO in India.
- The price of soybean oil, most consumed after palm oil, rose by 29% in the country this year; while sunflower oil, 90% of which India gets from Russia and Ukraine, stopped coming in almost completely.
- Amid this situation, India had requested Indonesia in March to increase palm oil shipments to make up for the short supply and expensive alternatives.
- Despite the rising prices of the commodity, India's palm oil imports jumped 21% in March from the previous month as traders moved to secure alternatives to sunflower oil that could no longer be bought from Ukraine, four dealers told Reuters.

Current Affairs Quiz

- 1) Which of the following statements is/are correct regarding Seafloor Spreading?
1. It is a geological process that creates crusts, the outermost shell of the Earth.
 2. Faster seafloor spreading rates mean more volcanic activity.

Select the correct answer code:

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

Answer : c

- 2) Consider the following statements:

1. Social Cost of Carbon is the estimate of economic costs, of emitting one additional ton of carbon dioxide into the atmosphere.
2. India's country-level social cost of carbon emission is the highest in the world.

Which of the above statements is/are correct?

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

Answer : c

- 3) Consider the following statements:

1. Special Launch Systems Rocket is a light weight reusable launch vehicle developed by ISRO in collaboration with the NASA.
2. It will be used by the ISRO for its Gaganyaan mission and by the NASA for its Artemis mission.

Which of the above statements is/are correct?

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

Answer : d

The SLS is a super-heavy non-reusable launch vehicle that NASA is currently scheduled for launch as part of the Artemis program whose primary aim is to return humans to the moon for the first time since 1972.

- 4) Consider the following statements:

1. Marketing Mix concept is a set of marketing tools used to promote market product or services in the market in order to sell it.
2. The concept was formulated by NITI Aayog for the benefit of small and medium enterprises.
3. It consists of four Ps of marketing such as product, price, place, and promotion mix.

Which of the above statements is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

Answer : c

5) Which of the following statements is/are correct with respect to the Commission on International Religious Freedom (CIRF)?

1. It is an independent, bipartisan United Nations agency created by the 1998 International Religious Freedom Act (IRFA).
2. India has been placed under the category of 'Country of Particular Concern (CPC)' for the third year in a row.

Select the correct answer code:

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

Answer : b

The commission is an independent, bipartisan US federal government agency created by the 1998 International Religious Freedom Act (IRFA).

6) Consider the following statements with respect to self-amplifying mRNA Vaccine:

1. The messenger RNA encodes the spike protein of the virus and directs the cell to produce copies of the spike protein.
2. The self-amplifying mRNA encodes four extra proteins in addition to the vaccine antigen.

Which of the above statements is/are correct?

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

Answer : c

7) Consider the following statements regarding:

1. Blue Straggler is the class of stars found either in globular or open star clusters that are bigger and bluer than the rest of the stars.
2. Blue Straggler are found only in dense stellar systems, where distances between stars are less than a fraction of a light year.

Which of the above statement is/are incorrect?

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

Answer : d

8) Consider the following statements:

1. Space Equity Action Plan is formulated by NASA with the aim of identifying and eliminating systemic barriers and ensure representation.
2. According to the plan the Canadian, Japanese, and European Space Agency will share data related to Artemis mission with NASA.

Which of the above statements is/are correct?

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

Answer : a

9) Which of the following statements is/are correct with respect to molecular photoisomers?

1. They can store solar energy into chemical bond strain and later release it on demand.



2. All photoisomers are not capable of absorbing and transforming sunlight into chemical energy.

Select the correct answer code:

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

Answer : c

10) Consider the following statements:

- 1. International Financial Services Centres Authority works under the aegis of the Reserve Bank of India (RBI) and acts as a unified regulator and promotes ease of doing business.
- 2. The objective of the IFSCA is to develop a strong global connect and focus on the needs of the Indian economy.

Which of the above statements is/are correct?

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

Answer : b

International Financial Services Centres Authority (IFSCA) is a statutory unified regulatory body under the Department of Economic Affairs, Ministry of Finance.

11) Consider the following statements:

- 1. Liquidity Adjustment Facility allows banks to borrow money through repurchase agreements or to make loans to the RBI through reverse repo agreements.
- 2. RBI introduced LAF as a result of the Narasimham Committee.
- 3. It manages the inflation in the economy by increasing and reducing the money supply.

Which of the above statements is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

Answer : d

12) Consider the following statements:

- 1. is the process that is intended to filter content in the internet for political purposes.
- 2. Splinternet limits citizens access to data and forces businesses to keep data within borders.

Which of the above statement(s) is/are correct?

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

Answer : c

13) Consider the following statements with respect to H3N8 bird flu:

- 1. The flu is common in horses and dogs and there is possibility of human infection.
- 2. The virus in humans is treated using vaccine which is reassortant, with genes from viruses that have been detected previously in the human body.

Which of the above statements is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2

d. Neither 1 nor 2

Answer : a

The H3N8 virus in this human case is a reassortant, with genes from viruses have been detected previously in poultry and wild birds.

14) Which of the following statements is/are correct regarding RISC-V Programm, sometimes seen in the news?

1. The programme aims to create future generations of micro processors to enhance India's strategic focus on computing and digitisation.
2. The programme is launched by the Ministry of Science and Technology.

Select the correct answer code:

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

Answer : a

It was launched by the Ministry of Electronics and IT.

15) Consider the following statements:

1. GEO Augmented Navigation is an Indian Satellite Based Augmentation System jointly developed by the Airports Authority of India and ISRO.
2. The GAGAN GEO footprint expands from Africa to Australia and it can be used by India's neighboring countries.
3. It provides non-precision approach (NPA) service accurate to within the radius of 1/10th of a nautical mile over the Indian Flight Information Region (IFR).

Which of the above statements is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1 and 3 only
- d. 1, 2 and 3

Answer : d

16) Consider the following statements with respect to Comets:

1. The tiny frozen part of a comet is called the eye which contains icy chunks, frozen gases with bits of embedded dust.
2. A comet warms up near the sun and develops an atmosphere called coma.
3. Sungrazers are comets that maintains a safe distance from the Sun to avoid evaporation from the heat of the Sun.

Which of the above statements is/are correct?

- a. 1 and 2 only
- b. 1 and 3 only
- c. 2 only
- d. 1, 2 and 3

Answer : c

The tiny frozen part of a comet is called the nucleus, which contains icy chunks, frozen gases with bits of embedded dust.

Some comets, called sungrazers, crash straight into the Sun or get so close that they break up and evaporate.

17) Consider the following statements:

1. The advanced sections among the OBCs, the creamy layer, should be excluded from the list of beneficiaries of reservation.



2. No reservation in promotions and reservation should be confined to initial appointments only.
3. The total reserved quota should not exceed 50% except in some extraordinary situations.
4. A permanent statutory body should be established to examine complaints of over-inclusion and under-inclusion in the list of OBCs.

Which of the above rules are laid down by the Supreme Court in the Indra Sawhney vs. Union of India Case, 1992?

- a. 1 and 3 only
- b. 1, 2 and 3 only
- c. 2, 3 and 4 only
- d. 1, 2, 3 and 4

Answer : d

18) Consider the following statements:

1. Fort St. David was built by the English East India Company under Major General Stringer Lawrence in 1677.
2. Fort St. David became the capital of the British in south India after the capture of Madras by La Bourdonnais in 1746.
3. It is a designated ancient monument maintained by the Archaeological Survey of India (ASI) under Ministry of Culture.

Which of the above statements is/are correct?

- a. 2 only
- b. 1 and 2 only
- c. 2 and 3 only
- d. 1, 2 and 3

Answer : a

The fort was built by the erstwhile rulers of Gingee as a small fort, it came under the Marathas after Shivaji captured Gingee in 1677 and remained under their possession till 1690.

The structure is now maintained by the Arcot Lutheran Church (ALC) and is mainly used for conducting church meetings.

19) Which of the following statements is/are correct regarding Declaration for the Future of the Internet?

1. It is a political commitment to set up single global internet, that fosters competition, privacy, and respect for human rights.
2. India, Russia, China, and US are among the large nations that are part of the declaration.

Select the correct answer code:

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

Answer : a

India, China, Russia are among the large nations that are not part of this declaration.

20) Consider the following statements:

1. Open Radio Access Network is a network that is built entirely on cloud principles and has an open, multi-vendor architecture for deploying mobile networks.
2. It opens the protocols and interfaces between the various subcomponents such as the hardware and software in the RAN.

Which of the above statements is/are correct?

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

Answer : c

