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Issue Price: ₹ 50

# Weekly Current Affairs Compilations

A holistic magazine for UPSC Prelims, Mains and Interview Preparation

## Volume 49

**26<sup>th</sup> Sep – 9<sup>th</sup> Oct 2020**

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**TOPIC 1. CESS****The story so far:**

1. The Comptroller and Auditor General (CAG) of India, in its latest audit report of government accounts, has observed that the Union government withheld in the Consolidated Fund of India (CFI) more than ₹1.1 lakh crore out of the almost ₹2.75 lakh crore collected through various cesses in 2018-19. The CAG found this objectionable since cess collections are supposed to be transferred to specified Reserve Funds that Parliament has approved for each of these levies. The nation's highest auditor also found that over ₹1.24 lakh crore collected as Cess on Crude Oil over the last decade had not been transferred to the designated Reserve Fund — the Oil Industry Development Board — and had instead been retained in the Centre's coffers. Similarly, the Goods and Services Tax (GST) Compensation Cess was also "short-credited" to the relevant reserve fund to the extent of ₹47,272 crore in two years (₹40,806 crore in 2018-19 and ₹6,466 crore in 2017-18).

**What is a cess?**

2. The Union government is empowered to raise revenue through a gamut of levies, including taxes (both direct and indirect), surcharges, fees and cess. While direct taxes, including income tax, and indirect taxes such as GST are taxes where the revenue received can be spent by the government for any public purpose in any manner it deems appropriate for the nation's good, a cess is a earmarked tax that is collected for a specific purpose and ought to be spent only for that.
3. Every cess is collected after Parliament has authorised its creation through an enabling legislation that specifies the purpose for which the funds are being raised. Article 270 of the Constitution allows cess to be excluded from the purview of the divisible pool of taxes that the Union government must share with the States.

**How many cesses does govt. levy?**

4. A report titled 'Cesses and Surcharges: Concept, Practice and Reforms since 1944', prepared by the Vidhi Centre for Legal Policy in August 2018 and submitted to the Fifteenth Finance Commission listed 42 cesses that have been levied at various points in time since 1944.
5. The very first cess was levied on matches, according to this study. Post Independence, the cess taxes were linked initially to the development of a particular industry, including a salt cess and a tea cess in 1953. Subsequently, the introduction of a cess was motivated by the aim of ensuring labour welfare. Some cesses that exemplified this thrust were the iron ore mines labour welfare cess in 1961, the limestone and dolomite mines labour welfare cess of 1972 and the cine workers welfare cess introduced in 1981.
6. The introduction of the GST in 2017 led to most cesses being done away with and as of August 2018, there were only seven cesses that continued to be levied. These were Cess on Exports, Cess on Crude Oil, Health and Education Cess, Road and Infrastructure Cess, Building and Other Construction Workers Welfare Cess, National Calamity Contingent Duty on Tobacco and Tobacco Products and the GST Compensation Cess. And in February, Finance Minister Nirmala Sitharaman introduced a new cess — a Health Cess of 5% on imported medical devices — in the Finance Bill for 2020-2021.

**Why is the issue in the news currently?**

7. The CAG's finding that the Centre retained ₹47,272 crore of GST compensation cess in the Consolidated Fund instead of crediting it to the GST compensation fund in the very first two years of the implementation of the new indirect tax regime has raised several key questions.
8. For one, most crucially, the express purpose of this particular cess is to help recompense States for the loss of revenue on account of their having joined the GST regime by voluntarily giving up almost all the power to levy local indirect taxes on goods and services.
9. Also, as the Vidhi Centre for Legal Policy report observed, the share of revenue to the Centre's annual tax kitty from cess had risen to 11.88% of the estimated gross tax receipts in 2018-19, from 6.88% in 2012-13. Given that cess does not need to be a part of the divisible pool of resources, this increasing share of cess in the Union government's tax receipts has a direct impact on fiscal devolution.

## TOPIC 2. MONETARY POLICY COMMITTEE

1. On October 1, Reserve Bank of India's Monetary Policy Committee (MPC) was supposed to announce country's key interest rates and monetary policy for next two months. This will have to wait as **government is yet to appoint three new members** at a time when pandemic is raging, GDP growth is floundering and borrowers are bracing for a mega loan restructuring process.

### Why did the RBI postpone the MPC meeting?

2. The bi-monthly meeting was scheduled for September 29 to October 1. The RBI postponed it as it failed to nominate its three members to the six-member panel. The tenure of the three members appointed by the government in 2016 expired after the previous policy on August 6. MPC is the statutory committee that fixes the key policy interest rate and monetary policy stance of the country as well as the inflation target.

### How are MPC members selected?

3. RBI Governor Shaktikanta Das is head of MPC, while Deputy Governor in charge of Monetary Policy Department (Michael Patra) and the Executive Director looking after the monetary policy are members from the RBI side. The three government nominees are selected by a committee formed by the government for a four-year term. The three members whose tenure ended in August are: Dr Chetan Ghate, Professor, Indian Statistical Institute; Dr Pami Dua, Director, Delhi School of Economics; and Dr Ravindra H Dholakia, former Professor, IIM Ahmedabad.
4. As per RBI Act, quorum for an MPC meeting is four, and in effect committee cannot meet until at least one external member is present, in addition to three RBI representatives. If there's a tie on any proposal, RBI Governor holds casting vote.

### What did the MPC do in the last four years?

5. The bi-monthly MPC meeting discusses the domestic and international scenario before finalising the repo and reverse repo rates. If there is no consensus on the rate or policy, there will be voting process. MPC members differed on a couple of occasions on the quantum of repo rate changes but eventually went by the majority decision. Although the MPC slashed the key policy rate — repo rate — by 250 basis points to four per cent, the rate cut transmission has been rather slow with banks taking their time to pass on the benefits.

### What does the delay in announcing the new monetary policy mean?

6. Interest rates play a crucial role in economy. Any delay in changing the rates will impact economy as MPC sets repo rate (the rate at which RBI lends funds to banks) and reverse repo rate (the rate at which the RBI borrows funds from banks). The pandemic is still evolving and credit offtake has been sluggish. "The economy is facing a serious challenge and the RBI has been leading from the front with quick responses through rate cuts, injecting liquidity through open market operations and long-term repo operations and a variety of innovative tools to manage and ensure financial stability. In this hour of economic emergency, the MPC has to be in place to formulate policy. This delay could have been avoided," said V K Vijayakumar, Chief Investment Strategist at Geojit Financial Services.

### Why was MPC created?

7. Prior to October 2016, the RBI Governor used to decide on policy rate. Even though he was assisted by a team of officials from the central bank, the ultimate decision rested with the Governor. India joined a growing band of countries that, beginning in 1990, adopted flexible inflation targeting as their framework for monetary policy.
8. In 2016, the government had provided statutory backing to the MPC by notifying amendments to the RBI Act, 1934. The inflation target and tolerance band around it, and accountability with respect to failure to achieve the target, were notified by the government during May-August 2016. It was for the first time that an explicit inflation target was given to the RBI, along with failure level.
9. Rate-setting decisions were now made through voting in MPC rather than the Governor alone taking a call on these matters. The RBI now releases both MPC resolutions and minutes of the minutes (with a lag) — providing a detailed review of the analysis and individual assessment of the members that went into framing of the policy.

### Has it been effective in framing the monetary policy?

10. The first MPC meeting was held on October 4, 2016 when Urjit Patel was the RBI Governor. The MPC has since then slashed the repo rate by 250 basis points to 4% in the last four years with 115 bps reduction in the last nine months. With retail inflation picking up in recent months, the MPC in its last policy review in August kept the repo rate unchanged at 4% while deciding to continue with the accommodative stance. The current inflation target is 4% — within a band of 2-6% — which the RBI is expected to maintain. The retail inflation level is now above the target of 6% with the August reading at 6.69%, and it has been above the medium-term target of 4% for nearly a year now. The amended RBI Act defines failure as average inflation breaching the tolerance band for three consecutive quarters, not instantly.

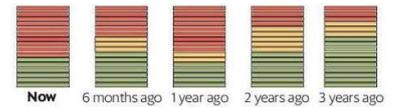
## TOPIC 3. MACRO TRACKER

### MINT MACRO TRACKER

- Parameter value
- ▲ Performance better than five-year average
- ▼ Performance worse than five-year average
- ◀▶ Performance in line with five-year average

### MACRO TRACKER SNAPSHOT

As of August, six of the 16 indicators in the tracker are above the five-year trend (highlighted in green) and 10 are below (red), while zero maintained the trend (amber). This is worse than the reading from six months ago.



The average band is constructed as +/- 10% interval around the five-year mean. The upper and lower bounds are wider for series with more volatility.

Source: Centre for Monitoring Indian Economy, Bloomberg, MOSPI, Mint calculations

1. Indian economy is picking up pace, after being stuck in a limbo for past few months. The latest edition of *Mint's* macro tracker shows that six of the 16 high-frequency economic indicators considered in the tracker are now in green, or above their five-year-average trend. The remaining 10 are in red, or below the five-year-average trend.
2. April saw hardest hit on economy, with lockdown imposed to contain the pandemic in its most stringent phase. As many as 14 of the 16 high-frequency indicators had turned red that month, the worst reading seen since the macro tracker was launched in October 2018 to offer a monthly report card on the state of the Indian economy.
3. After a rebound in May, recovery seemed to be losing momentum. In May-July, reading remained same with 12 out of 14 indicators being in red. August saw an improvement for first time since May, with number of indicators in red dropping to 10.
4. The outlook remains clouded as the pandemic continues to spread, raising the risk of further localized lockdowns, and the jury is still out on the sustainability of the recovery.
5. "There are reasons to be guarded about prospects of a recovery," said an ICICI Securities Primary Dealership report on 14 September. A large part of recovery in production activity may simply be inventory restocking, and in anticipation of future supply disruptions, it said. It will take time for clear trends to emerge, the report said.
6. For the last four months, all four indicators of production activity considered in the tracker were in red. With growth returning in rail freight traffic, the count fell to three in August.
7. However, this growth must be taken with a pinch of salt. The 4% growth in rail freight is partly because of a low base effect. In August 2019, rail freight traffic had declined 6%.
8. Meanwhile, the other three indicators of the producer economy segment—the composite Purchasing Managers' Index (PMI), core infrastructure sector growth, and bank non-food credit—are still in the red.
9. The composite PMI, which measures combined growth in manufacturing and services, rose to 46.0 in August from 37.2 in July, but continued to signal contraction. The manufacturing sector rebounded sharply in August (52.0) but contraction in services (41.8) weighed on overall economic recovery. Core sector growth, published with a month's lag, continued to contract in July (-10%), but rate of contraction declined. Last time core sector had expanded was in February. Bank non-food credit grew 6.7% in July, same as the previous month (*see chart*).
10. There are signs of improvement in the consumer segment as well. Two of the four consumption indicators were in green in August, and two in red. Passenger vehicle dispatches picked up in August to levels higher than last year. For the first time in 20 months, passenger vehicle dispatches grew year-on-year. Again, this growth was on a low base and partly in anticipation of higher festival sales. Retail sales remained subdued in August.

11. Tractor sales showed sharp improvement (75%) in August, helped by rising rural demand. Domestic air passenger growth (-76%) showed no material improvement. Broadband subscriber growth remained in positive territory, but much below the five-year-average level.
12. Consumption indicators could improve further in coming months because of pent-up demand and festive season.
13. Surveys by Nielsen suggest that consumer sector has been hit hard by pandemic, with demand recovery in non-essentials still muted. The demand for essentials has recovered, largely driven by pent-up demand in rural India.
14. Even as domestic demand saw a rebound, weak global demand meant that exports weighed down on the recovery of the manufacturing sector. After continuously rising since May, India's merchandise exports fell for the first time in the month of August, widening the trade gap. Exports in labour-intensive goods, in particular, remained depressed, adding to the stress in the domestic jobs market.
15. India's financial metrics were more resilient in August, but the stock market correction over the past few weeks has raised fears that markets may not remain buoyant in the months ahead.
16. Data for coming months will give a better sense of how quickly Indian economy can be expected to get back on track.

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## TOPIC 4. MICRO FIRMS



In a way, the government has excluded the entire non-formal sector from the new definition and is telling firms to either formalise or perish. RAJ K RAJHT

1. Amid farm sector debate, a recent notification by government of India on Micro Small and Medium Enterprises (MSME) went largely unnoticed. These circulars were issued in light of the announcements made by Finance Minister Nirmala Sitharaman on the reclassification of what could be considered under the category of MSMEs.
2. In doing so, notifications may address issues pertaining to small and medium enterprises, but completely leave aside the concerns of the micro enterprises. This, of course, provides a trigger to ask some fundamental questions about the nature of the Indian economy: Why do small firms stay small in India and often never acquire the necessary scale to improve productivity levels? What are the legal and regulatory hoops that a small firm has to jump through? And might it help if government policy on micro and unincorporated enterprises is distinctly different from all incorporated entities?
3. With the new notifications, the definition of MSMEs has moved beyond a pure investment criterion to a dual criterion of investment and turnover. Based on the investment criteria, what used to be the upper end in the definition of a medium enterprise—a firm with an investment of ₹100 million (in plant, machinery or equipment)—is now defined as a small enterprise. A firm having an investment of up to ₹500 million would now become the newly defined ‘medium’ enterprise.
4. But the most important category of firms, which require particular attention, may be the micro enterprises. Given the preponderance of extremely small firms in the Indian economy, a micro enterprise would now cover a whole range of enterprises, from the roadside pakodawalla to a firm that has an investment of up to ₹10 million (the limit used to be ₹1 million or ₹2.5 million, depending on whether the company was involved in services or manufacturing sector activity, respectively).
5. On face of it, policy objective looks laudable—it facilitates growth of smaller enterprises to larger sizes without fear of losing privileges because of growth. But do benefits still hold on closer scrutiny? When limits are increased so drastically, we are providing a large inlet of firms that were otherwise considered large to come into category of small and medium enterprises and a very small growth outlet. It is very unlikely that a firm at upper end of extant limit of ₹100 million would overnight grow to a ₹500 million firm, but an erstwhile firm having an investment ₹500 million and already in open market is now entering protected environment of a “growing” firm.
6. It is not only eligible for loans through the banking system under existing targets for the priority sector, but can also participate in the government procurement system which is reserved for MSMEs. This is bound to crowd out the smaller players. Of course, the fittest have to survive and the weak have to be squeezed out. The quest for formalisation and efficiency takes us there.

Small is big

7. The 73rd round of the National Sample Survey (NSS) estimated the total number of unincorporated, non-agricultural enterprises to be around 63.4 million and these were employing 111.27 million persons, a large number of them being run solely by the entrepreneur.
8. The own account enterprises—that did not hire external labour on a regular basis—were 53.3 million. Of these enterprises, 96% were sole proprietaries and about 2% were partnerships, the rest being trusts and other forms of associations. Of the total number of own account firms, around 69% of the enterprises did not have any form of registration. Thus, we are talking of a fairly large number of establishments, livelihoods, and families which depend on these livelihoods.
9. Now, here's the issue. Apart from the new definition of MSMEs which the government has come up with, the Reserve Bank of India (RBI) and the banking system have their own internal definitions on who qualifies for certain types of credit.
10. In the case of microfinance, the RBI has indicated that a loan of less than ₹125,000 which is lent by a specialised institution registered as a Non-Banking Finance Company-Microfinance Institution (NBFCMFI) would be considered as microfinance (subject to some other conditions being met). In the case of Small Finance Banks (SFB), the RBI has indicated that 50% of the portfolio should consist of account sizes of less than ₹2.5 million, thereby, providing its definition of "small" as ₹2.5 million in an SFB.
11. MUDRA has provided its definition of what micro-units are by breaking up the loan limits up to ₹50,000 as Shishu, ₹500,000 as Kishore and ₹1 million as Tarun.
12. As far as the priority sector lending norms are concerned, the RBI requires the banks to lend 40% of their Adjusted Net Bank Credit (ANBC) to listed sectors that are notified, of which MSME forms a part. For the purposes of the targets, there is a hard target of 7.5% of ANBC to be achieved by lending to micro enterprises. A hard target would imply penalties on non-achievement of the targets, unlike a soft target for, say, weaker sections where there are no penal clauses.
13. The definition of what constitutes a micro enterprise is now pegged to the notification issued by the government of India on 26 June, 2020. This definition is in conformity with the rather liberal revised investment and turnover sizes discussed above. In this case, a micro-enterprise is one which could have an investment of up to ₹10 million (or a turnover of ₹50 million), a far-removed limit from the other markers and definitions discussed above.

#### Register or perish

14. While we have argued that these limits would crowd out the smaller loans, let us park that argument for a while and look at how these will be operationalised. The limits on investments and turnovers are broad specifications, but the eligibility for being a recognised enterprise that is entitled to these benefits would require a registration under the Udyam registration portal.
15. From the NSS data, we find that 69% of the informal sector enterprises do not have any form of registration anywhere. While the portal in a different form has been in existence from September 2015, the total registrations in the portal as of June 2020 was about 16% of the enterprises estimated by the NSS.
16. So, there is a big gap of people who are already falling through the cracks. Now, a further rub: The requirement is that not only should every enterprise register on the Udyam portal, even those who have registered will have to re-register in order to be recognised as an enterprise to qualify for a loan under the priority sector lending norms.
17. The registration process involves some documentation which most likely the informal sector would not have: a PAN Card, a GST Registration number, and an Aadhaar number which is mandatory. There could be one identification and unique number based on the registration and all activities would be mapped to one of these identity documents and de-duplicated. Unless the enterprise/entrepreneur is registered on this portal, she is not recognised for the purposes of priority sector lending norms.
18. In a way, with the RBI outsourcing the definition of a micro enterprise to a gazette notification and that notification imposing additional layers of compliance, the entire informal sector would now be excluded from the discourse. Or they would be excluded at least until the neighbourhood pakodawalla goes to the portal and uploads his documents.
19. Let us assume that this is also achievable. There is a further rub: The portal explicitly excludes wholesale and retail traders from the classification and, thus, from registering. Again, NSS data tells us that of the 63.4 million unincorporated entities, 19.96 million entities are classified as involved in trade. That is the largest chunk of micro enterprises. So, they are effectively left out of the definition, registration, credit facility and procurement processes.

## We go in circles

20. So, theoretically, an MFI can lend to these micro-enterprises. And loan to an MFI is reckoned as a priority sector loan, provided that the end use is established via the definition and process criteria, which takes us back to the Udyam Portal! If you are an SFB—an MFI in your past avatar—it is unlikely that the portfolio you specialise in would qualify under the Udyam portal registration.
21. In a way, the government has excluded the entire non-formal sector from the new definition and is telling firms to either formalise or perish. The first step towards formalisation is an Aadhaar number which throws out a one-time password (OTP). The next step is mapping the Aadhaar number with all the enterprises (formal or informal) on the Udyam portal and then seeking other details such as PAN and GST.
22. So, welcome to the new Assam and the new National Register of (Corporate) Citizens for informal enterprises, where India UnInc becomes India UnWelcome.
23. Now, the pakodawalla outside the office of a news channel has created an enterprise, but cannot scale up unless he gets the documentation props. He is seen as inherently risky and now the banks do not even get regulatory forbearance for lending to him under the new priority sector lending norms.
24. So, he has to stay put without scaling up due to entry barriers in the rationed credit market. Was this the intent of the FM? I would like to grant her the benefit of the doubt and say that possibly she did not realise what would be done to please her. Data collection and Aadhaar linking is an obsession of this government and you should not blame anybody for attempting to do that. The enthusiasm of this government in collecting and linking data is only matched by its reluctance to share any data with anybody.

## The way forward

25. So, is there a viable way to protect small firms? What can be done now?
26. The RBI can have a mind of its own and define micro enterprises according to the parameters it has established for MFIs and SFBs for the purposes of classification of priority sector norms. Peg it to Mudra norms if they really need to outsource!
27. Otherwise, the government can create a new category of nano enterprises and pat itself on the back.
28. This could be for unincorporated enterprises who have an investment of up to ₹1 million and a turnover of up to ₹2.5 million and this amount could be the lower end of micro enterprises. The registration requirement for informal enterprises up to this limit could be exempt and a Udyam registration could be made mandatory on breaching this limit.
29. Or, one more option is to just fall back on a Mudra registration which could be initiated without the requirement of any elaborate documentation. Much like banks have a minimal Know Your Customer (KYC) norm for a no-frills account, these nano enterprise registrations could come without any strings (or frills). Pegging it with Mudra-type conditionalities will ensure that the informal sector would be alive and kicking.
30. Unfortunately, none of the above may ultimately be considered. In our enthusiasm to formalise and collect data, the state will not give up on any of the conditionalities. This would mean that the loan books would move upwards toward larger firms, and the small and informal sector will be completely squeezed out.
31. After all, the pakodawallas have to be formalised; they need to be released from the clutches of informal moneylenders and be made a part of start-up India and made to stand up for India. But that will happen only after a venture fund makes a substantial investment in the business of the pakodawalla. Till then, we can wait in anticipation of Godot.

## TOPIC 5. VODAFONE

1. Vodafone Group Plc said on Friday that it had won an international arbitration case against the Indian government, ending one of the most high-profile disputes in the country involving a \$2 billion tax claim.
2. An international arbitration tribunal in The Hague ruled that India's imposition of a tax liability on Vodafone, as well as interest and penalties, were in a breach of an investment treaty agreement between India and the Netherlands, two sources with direct knowledge of the matter said.
3. India had claimed a total of ₹27,900 crore (\$3.79 billion), including about \$2 billion in tax, as well as interest and penalties, one of the sources said.
4. The tribunal, in its ruling, said the government's demand is in breach of "fair and equitable treatment" and it must cease seeking the dues from Vodafone.
5. It also directed India to pay £4.3 million (\$5.47 million) to the company as compensation for its legal costs.
6. Vodafone said in a statement the amount of the award was confidential. Shares in the company's India unit, Vodafone Idea, ended 13% higher on Friday.
7. "The tribunal held that any attempt by India to enforce the tax demand would be a violation of India's international law obligations," Vodafone said in its statement.
8. The Finance Ministry said it would carefully study the award, together with its lawyers. "After such consultations, the government will consider all options and take a decision on further course of action, including legal remedies," the Ministry said in a statement.
9. "Vodafone has finally got justice, first from the Indian Supreme Court and now from an international arbitral tribunal," said Anuradha Dutt, senior partner at DMD Advocates, an Indian law firm representing the company.
10. The ruling brings an end to one of the most controversial disputes in India under international treaty agreements that it enters into with countries to protect foreign investments.
11. India is entangled in more than a dozen such cases against companies, including Cairn Energy, over retrospective tax claims and cancellation of contracts.
12. The exchequer could end up paying billions of dollars in damages if it loses.
13. To reduce future arbitration claims, India has ended such agreements with over 50 countries and is working on a new law to protect foreign investors by offering relief from possible policy changes even as it upholds the right to tax them, Reuters reported.
14. Vodafone's tax dispute stems from its \$11 billion deal to buy the Indian mobile assets from Hutchison Whampoa in 2007. The government said Vodafone was liable to pay taxes on the acquisition, which the company contested.
15. In 2012, India's top court ruled in favour of the telecom provider but the government changed the rules to enable it to tax deals that had already been concluded.
16. In 2014, Vodafone initiated arbitration proceedings against India.



### Retro-tax case

A brief look at the events that led to the arbitration case

**2007:** Vodafone, in a \$11 billion deal, buys the Indian mobile assets from Hutchison Whampoa

- India claims \$3.79 billion, including about \$2 billion in tax, as well as interest and penalties

- Telecom company contests the decision

**2012:** Supreme Court rules in favour of the telecom services provider

- Government changes rules to enable it to tax deals that had already been concluded

**2014:** Vodafone initiates arbitration proceedings against India at The Hague



1. In a unanimous decision, the Permanent Court of Arbitration at The Hague on Friday ruled that India's retrospective demand of Rs 22,100 crore as capital gains and withholding tax imposed on the British telecommunication company for a 2007 deal was "in breach of the guarantee of fair and equitable treatment". The court has also asked India **not to pursue the tax demand** any more against Vodafone Group.

### What is the case?

2. In May 2007, Vodafone had bought a 67% stake in Hutchison Whampoa for \$11 billion. This included the mobile telephony business and other assets of Hutchison in India. In September that year, the India government for the

first time raised a demand of Rs 7,990 crore in capital gains and withholding tax from Vodafone, saying the company should have deducted the tax at source before making a payment to Hutchison.

3. Vodafone challenged the demand notice in the Bombay High Court, which ruled in favour of the Income Tax Department. Subsequently, Vodafone challenged the High Court judgment in the Supreme Court, which in 2012 ruled that Vodafone Group's interpretation of the Income Tax Act of 1961 was correct and that it did not have to pay any taxes for the stake purchase.
4. The same year, the then Finance Minister, the late Pranab Mukherjee, circumvented the Supreme Court's ruling by proposing an amendment to the Finance Act, thereby giving the Income Tax Department the power to retrospectively tax such deals. The Act was passed by Parliament that year and the onus to pay the taxes fell back on Vodafone. The case had by then become infamous as the 'retrospective taxation case'.

#### **What is retrospective taxation?**

5. As the name suggests, retrospective taxation allows a country to pass a rule on taxing certain products, items or services and deals and charge companies from a time behind the date on which the law is passed.
6. Countries use this route to correct any anomalies in their taxation policies that have, in the past, allowed companies to take advantage of such loopholes. While governments often use a retrospective amendment to taxation laws to "clarify" existing laws, it ends up hurting companies that had knowingly or unknowingly interpreted the tax rules differently.
7. Apart from India, many countries including the US, the UK, the Netherlands, Canada, Belgium, Australia and Italy have retrospectively taxed companies, which had taken the benefit of loopholes in the previous law.

#### **What happened after India passed the retrospective taxation law?**

8. Once Parliament passed the amendment to the Finance Act in 2012, the onus to pay the taxes fell back on Vodafone. The amendment was criticised by investors globally, who said the change in law was "perverse" in nature.
9. "The retrospective amendment that overturned the decision of the highest court of the land was badly drafted in its wide generalities and carried a perverse sense of vindictiveness," said Nigam Nuggehalli, Dean of the School of Law at BML Munjal University.
10. Following international criticism, India tried to settle the matter amicably with Vodafone, but was unable to do so. After the new NDA government came to power, it said it would not create any fresh tax liabilities for companies using the retrospective taxation route.
11. By 2014, all attempts by the telco and the Finance Ministry to settle the issue had failed. Vodafone Group then invoked Clause 9 of the Bilateral Investment Treaty (BIT) signed between India and the Netherlands in 1995.

#### **What is the Bilateral Investment Treaty?**

12. On November 6, 1995, India and the Netherlands had signed a BIT for promotion and protection of investment by companies of each country in the other's jurisdiction.
13. Among the various agreements, the treaty had then stated that both countries would strive to "encourage and promote favourable conditions for investors" of the other country. The two countries would, under the BIT, ensure that companies present in each other's jurisdictions would be "at all times be accorded fair and equitable treatment and shall enjoy full protection and security in the territory of the other".
14. While the treaty was between India and the Netherlands, Vodafone invoked it as its Dutch unit, Vodafone International Holdings BV, had bought the Indian business operations of Hutchinson Telecommunication International Ltd. This made it a transaction between a Dutch firm and an Indian firm.
15. The BIT between India and the Netherlands expired on September 22, 2016.

#### **What did the Permanent Court of Arbitration at The Hague say?**

16. One of the major factors for the Court of Arbitration to rule in favour of Vodafone was the violation of the BIT and the United Nations Commission on International Trade Law (UNCITRAL).
17. In 2014, when the Vodafone Group had initiated arbitration against India at the Court of Arbitration, it had done so under Article 9 of the BIT between India and the Netherlands.
18. Article 9 of the BIT says that any dispute between "an investor of one contracting party and the other contracting party in connection with an investment in the territory of the other contracting party" shall as far as possible be settled amicably through negotiations.
19. The other was Article 3 of the arbitration rules of UNCITRAL, which, among other things, says that "constitution of the arbitral tribunal shall not be hindered by any controversy with respect to the sufficiency of the notice of arbitration, which shall be finally resolved by the arbitral tribunal".
20. In its ruling, the arbitration tribunal also said that now since it had been established that India had breached the terms of the agreement, it must now stop efforts to recover the said taxes from Vodafone.

## TOPIC 6. INDIA'S INVESTMENT

### MINT GRAPHITI

Chart 1

#### Value of new project announcements is at the lowest level since 2004

New project announcements (₹ trillion)

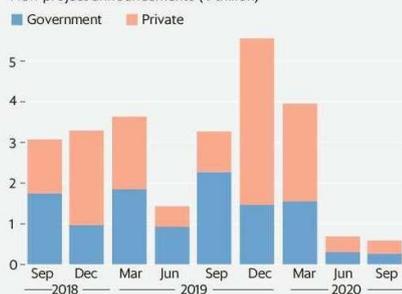
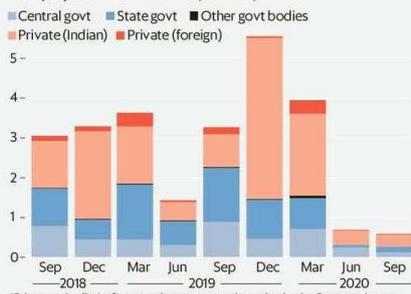


Chart 2

#### Both central and state government projects declined in the latest quarter

New project announcements (₹ trillion)



\*Other govt bodies refers to projects announced together by the Centre and states, and those announced by local government bodies.

Chart 3

#### Manufacturing sector saw a bump in investments in Sep qtr

New projects (₹ trillion)

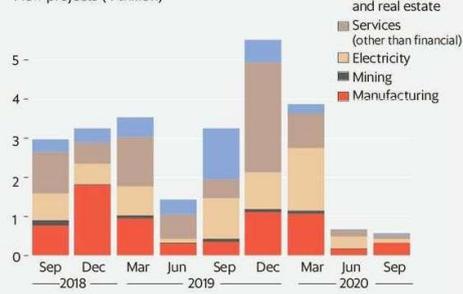


Chart 4

#### Stalling rates further declined for government sector projects but remained unchanged for private projects

Value of stalled projects as a percentage of value of total projects under implementation

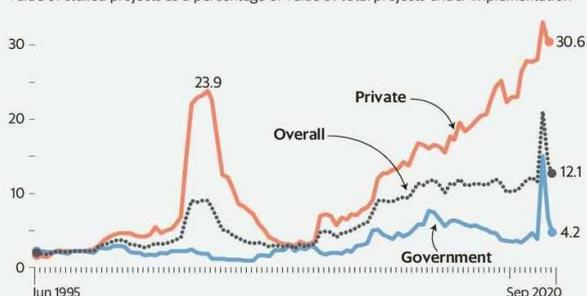
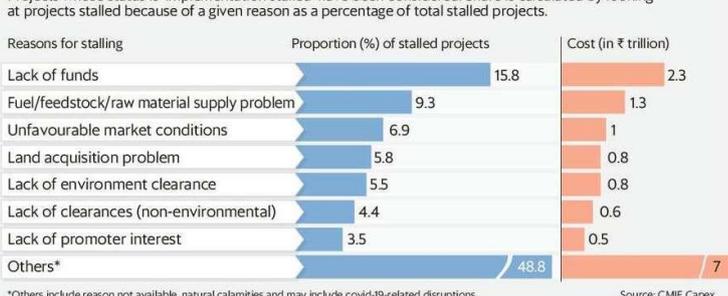


Chart 5

#### Lack of funds and unavailability of fuels/raw materials remain the main reasons for stalling of projects

Projects whose status is 'implementation stalled' have been considered. Share is calculated by looking at projects stalled because of a given reason as a percentage of total stalled projects.



1. After hitting a 16-year low in June quarter, new project investments fell further in the September quarter, shows the latest numbers from the project-tracking database of the Centre for Monitoring Indian Economy (CMIE).
2. The data shows that private and public sector companies announced new projects worth ₹59,000 crore in the September quarter, declining 82% year-on-year, and 15% sequentially. These numbers are provisional and may be revised later (*see chart 1*).
3. The sharp decline in new projects in June quarter was not very surprising as pandemic-induced lockdown was at its most stringent phase back then. But the continued slide in investments in the just-ended quarter suggests that firms continued to be extremely cautious, despite fewer lockdown restrictions and a rebound in demand.
4. High-frequency indicators tracked by *Mint's* macro tracker suggests that Indian economy picked up pace in August after being in limbo in the previous months. Manufacturing activity saw a further fillip in September, the latest purchasing managers' index data for India shows.
5. Yet, this pick-up in demand and manufacturing activity has not been able to revive investments, latest numbers show.
6. Even as the supply shock of the lockdown eases, India may be heading towards a demand shock as households and firms remained cautious amid a still-raging pandemic, *Mint* columnist Niranjan Rajadhyaksha wrote recently. The capex numbers suggest that firms are likely to conserve cash and withhold new investments till there is greater clarity on the sustainability of the demand recovery.
7. Even as private entrepreneurs have become risk-averse, cash-strapped governments have also squeezed capex, latest numbers suggest. Compared to last quarter, both government and private sector capex announcements fell by similar levels, 16% and 14%, respectively. The drop was the sharpest for central government projects, and announcements halved from the previous quarterly figure, to ₹12,000 crore (*see chart 2*).
8. State government project announcements, which were hit hardest in the June quarter, doubled in the September quarter, but they were at a mere 10% of their year-ago levels. Moreover, the rise was largely attributable to two major outliers (Bengaluru Integrated Biotech and Life Sciences Park project and Telangana floating solar power project), accounting for 60% of the announcements by state governments.
9. All sectors, barring manufacturing and construction, saw a decline in new projects in the just-ended quarter. Construction saw a slight pick-up, while manufacturing project announcements doubled on a low base. Yet, manufacturing investments are still 7% lower than the year-ago levels. New manufacturing project announcements were largely driven by the private sector, accounting for 79% of fresh investments in the sector.

Two major projects— Oragadam solar cells and modules manufacturing unit project and Uttar Pradesh electric vehicle manufacturing plant project phase 3— accounted for a third of these new projects. **(see chart 3).**

10. The rate of stalled projects declined from 7% to 4% for government-sector projects even as it rose slightly to 31% for private sector projects. The stalling rate is calculated as the value of stalled projects as a percentage of the value of total projects under implementation **(see chart 4).**

11. As in the previous quarters, lack of funds continued to be a major reason behind stalling of projects. Covid-19-related disruptions may have contributed to the stalling rate, with many projects stalled because of “other reasons”. This category typically captures unanticipated disruptions and natural calamities **(see chart 5).**

12. The outlook on investments remains clouded due to the uncertainty over the course of the pandemic, and the extent of government support to boost demand. While the government has been proactive in pushing for reforms on factor markets, stimulus measures have been limited so far.

CIVILSIAS

# TOPIC 7. GLOBAL VALUE CHAINS

## MINT GRAPHITI

Chart 1

**Supply chains of the 'Quad' nations are a lot more dependent on China than on one another**

% share of each nation in foreign value add of Quad nation exports (in 2018)

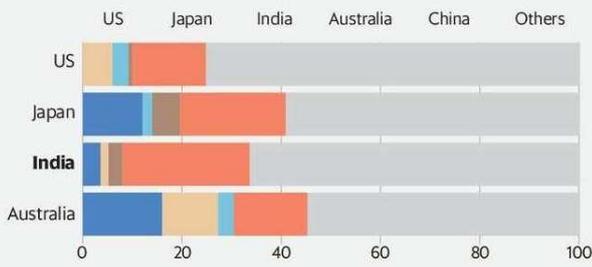


Chart 2

**In the last two decades, Indian export production has become more dependent on China**

% share of countries in foreign value added to India's exports

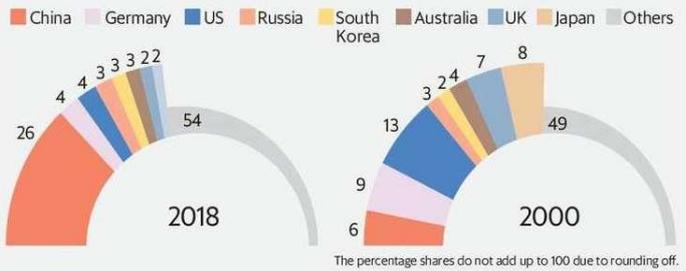


Chart 3a

**India depends on other nations for production of goods for export more than China does...**

Backward participation in global value chains: Share of foreign value added in gross exports of each country (in %, 2015)

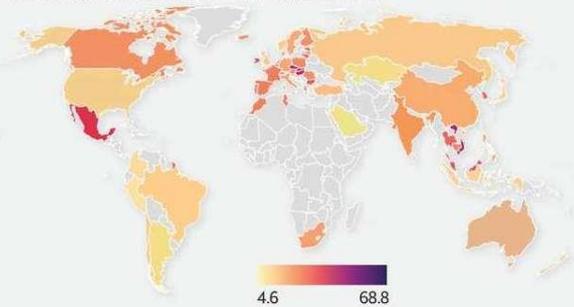


Chart 3b

**...but does not contribute as much to exports of other countries**

Forward participation in global value chains: Domestic value added by each country in gross exports of other countries (in %, 2015)

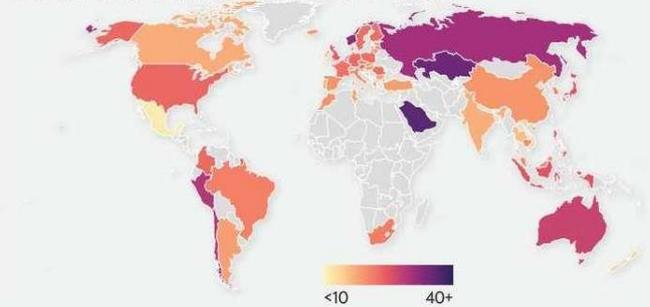
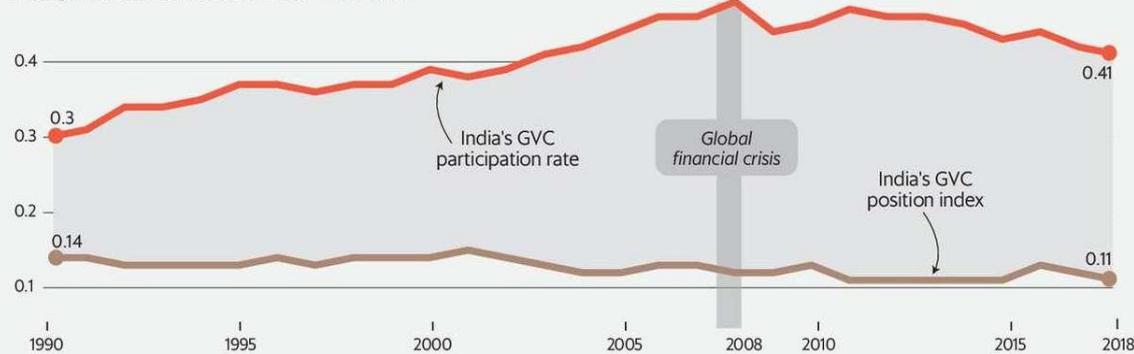


Chart 4

**India's value addition in global production chains has declined**

India's global value chain (GVC) participation rate (in %)



India's GVC participation rate estimates how much it is connected to global value chains for its foreign trade. The GVC position index shows a country's relative position in a GVC. For instance, a lower index means that a country is more downstream i.e. it contributes less value to other countries' exports than other countries add to its exports.

Chart 5

**India has very few lead firms in many industries**

Role played by lead firms in GVCs

✓ Yes ✗ No = Limited

Sector	AUTOMOBILES	CHEMICALS	GARMENTS	PETROCHEMICALS	SEMICONDUCTOR MICROCHIPS
Integration	✓	✗	✗	✓	✓
Upgrading	✓	=	=	✗	✗
Role of lead firms	Contribute to innovation, technology and skill development	Contribute to innovation; stimulate demand	Help reduce lead time, standardize production process	Encourage investment and forward integration; facilitate feedstock access	Contribute to innovation, cost reduction
Overall presence and examples of lead firms in India (MNC or Indian)	A few (Tata Motors)	Very few (BASF)	Very few (Gap, VF Corporation)	Very few (Reliance)	A few (Texas Instruments)

Note: Global value chains are structured around 'lead firms'. These are firms that drive the value chain by establishing forward or backward commercial linkages with a large number of MSMEs in a particular industry. This table is based on the Feb 2020 Icrier paper authored by Saon Ray and Smita Miglani. The overall presence of lead firms in different sectors is as described by the authors.

Source: UNCTAD EORA GVC databases, OECD Tiva Database, Icrier paper authored by Saon Ray and Smita Miglani (2020)

1. Chinese aggression in recent years has given new life to Quadrilateral Security Dialogue or Quad, a multilateral group comprising India, the US, Japan and Australia. The four nations, which resumed dialogue after a decade-long hiatus in November 2017, have stepped up efforts to counter Chinese dominance in the Indo-Pacific region.
2. The group is an important counterbalance to China's growing aggression in the region and is perhaps a strategic necessity for India. However, its capacity to provide an alternative to China in trade is limited at the moment.
3. China continues to be the most important hub of global value chains. Japan, the US and Australia are all dependent on supplies from China to manufacture products that they export (**see chart 1**).
4. India's own dependence on China is significant. More than one-fourth of the value added in Indian exports is accounted for by China alone. This was not the case at the turn of the century. India's reliance on China has increased manifold over the past two decades (**see chart 2**).
5. This dependence has increased more in recent months. Even as Indian troops are engaged in a tense confrontation with China since April, share of Chinese imports in India's trade basket has only gone up, despite the rhetoric of "self-reliance". Imports from China accounted for 14% of total imports in the last fiscal year. So far this year, it has increased to 19%. Dependence on Chinese pharmaceuticals and safety kits to battle the pandemic has meant that other Quad members, too, have been heavily dependent on Chinese imports this year.
6. Quad cannot offer an economic alternative to Chinese economy yet. These countries will have to continue to engage China economically even while seeking to balance Chinese military power, and it is going to be a tough balancing act.
7. With covid-19 disrupting global supply chains, many multinational companies have been considering the feasibility of shifting parts of their production platforms away from China. However, while there are benefits to diversification, it is neither easy nor cheap. The covid-19 recession has starved firms of cash and not many may be able to invest in other countries right away.
8. "We might see some relocation, but that may not be large-scale,". With wages increasing in China, some companies had started looking for alternatives in other markets, even before pandemic disrupted supply chains. However, those companies have moved elsewhere and not to India. To capitalize on the opportunity, India needs to improve ease of doing business and undertake reforms relating to land, labour and taxes.
9. In short run, it will be difficult for India, or any large economy, to decouple from China. However, in the long run, India has the potential to give China a run for its money. There is growing recognition, at least among the Quad countries, on the need to economically decouple from China, and India may stand to gain from this, said Jacob.
10. "China's unique selling proposition is that it has capacity to produce at a big scale at low costs,". "Only country other than China that can produce at that kind of scale at similar prices is India. We are still a low-cost production centre,".
11. India's deficits in physical and social infrastructure pose a major challenge though.
12. South Asia can become the next manufacturing powerhouse if it improves the business climate, links domestic firms to global value chains, and improves capabilities of workers and managers, a 2017 World Bank report said.
13. Participation in global supply chains has two aspects: how much value a country contributes in the making of foreign exports (forward participation) and how much it depends on foreign input for production of its domestic exports (backward participation). India has a relatively higher backward participation because of high import dependence in many industries, but its forward linkages are much lower (**see charts 3a and 3b**).
14. Data from the UNCTAD-EORA GVC database shows that not only has India's participation in global production declined since 2008, but its gains from integration have also declined. India is now using more high-value inputs from abroad to produce its exports and adding less value to the exports of other countries (**see chart 4**).
15. Efforts to reduce trade barriers, enhance infrastructure, and improve access to finance can aid further integration with value chains. Some of recent policies, such as Make in India initiative, have fallen short on impact. Other policies, such as rise in tariff walls, may have been counterproductive as they ultimately hurt Indian industries by raising input costs.
16. Another challenge is lack of enough lead firms. Lead firms, typically transnational corporations, create networks by breaking down production chain into distinct functions, and locating them wherever they can be carried out most effectively (**see chart 5**).
17. Tata Motors in automobile sector and Reliance in petrochemicals sector, for instance, play key roles in transferring technology, establishing supply chains and attracting foreign investments. However, India, in general, has very few such lead firms. Skill shortage, lack of access to finance and regulatory uncertainties prevent lead firms from developing in India.
18. Deeper domestic policy reforms with focused attention on ease of doing business will be needed to make Indian firms more competitive before they can start producing for the world.

## TOPIC 8. CRIMES AGAINST WOMEN

1. Data released by **National Crime Records Bureau (NCRB) for 2019** puts Rajasthan at the top when it comes to rape or attempt to rape cases. Between 2018 and 2019, there was a drastic increase of 49.11 % in cases of crimes against women in Rajasthan.
2. Against this rise in numbers, Opposition **BJP** is organising '*halla bol*' protests across the state Monday with party state president Satish Poonia saying under Chief Minister Ashok Gehlot, Rajasthan has recorded the most number of crimes and has become a "crime capital." Gehlot was elected Rajasthan CM in December 2018.

### **Where does Rajasthan stand in national figures for crime against women?**

3. Overall, Rajasthan stood second in crime against women, with a crime rate of 110.4 per lakh population; it is calculated by adding crimes registered under the Indian Penal Code (IPC) and Special and Local Laws (SLL). The list is topped by Assam with 177.8; however, it is one of the smaller states. Assam and Rajasthan are followed by Haryana (108.5) and Odisha (103.5). The national average is 61.3.
4. When it comes to IPC section 376 (rape), Rajasthan again tops the list with an incidence (FIRs registered) of 5,997 and 6,051 victims, translating into a crime rate of 15.9. The national average crime rate for rape is 4.8. For attempt to commit rape (Sec 376/511 IPC) too, Rajasthan tops the list with an incidence of 1,019 and 1,030 victims.
5. Also, the rate of all cognisable crimes in Rajasthan (IPC+SLL) stood at 392.2 Interestingly, Kerala tops the list with a rate of 1,287.7 while the national average is 367.4.
6. However, at 8.7 per cent, Rajasthan has the lowest pendency rate with police among all states when it comes to crime against women. The national average is 32.4 per cent.

### **How much is the difference between the 2018 and 2019 figures in Rajasthan?**

7. In Rajasthan, more cases are being registered now. The figures for crime against women (IPC+SLL) for the state increased from 25,993 (2017) to 27,866 (2018) to 41,550 in 2019. So while there was an increase of 7.21 per cent from 2017 to 2018, the increase from 2018 to 2019 was a drastic 49.11 per cent.
8. Overall IPC+SLL crimes have also shot up drastically. While there was an increase of just 1,873 cases between 2017 and 2018, the difference between 2019 and 2018 is of 53,848 cases, or an increase of 21.49 per cent. State capital Jaipur saw 2,957 more cases in 2018, compared to 2017, but the difference between 2019 and 2018 is 10,008 cases.

### **Why have the figures shot up drastically in Rajasthan under Congress?**

9. Soon after assuming power, Chief Minister Ashok Gehlot emphasised the **need to mandatorily register an FIR**. A January 31, 2019 circular by then Director General of Police Kapil Garg, said that "registration of FIR is the fundamental duty of police." In the detailed note, he wrote how an immediate registration of FIR for a cognisable offence "reflects sensitivity and efficiency of police before the complainant," and how a delay in registration of FIR aggravates the pain of the complainant and works to the benefit of the accused.
10. At a police department review meeting in June 2019, Gehlot said that every complainant who arrives at a police station be heard patiently and "registration of FIR should be ensured." He said that "complaints about hesitation in registering FIR or about behaviour (of police) will not be tolerated." Importantly, he said that "there is no need to worry if more FIRs lead to rise in crime figures."
11. The office of the Director-General of Police has, time and again, sent circulars to district police reminding them of January 31, 2019 circular. One such circular from February 5, 2020, reminded them that "*parivadi ki report har surat mein darj ki jaave* (complainant's report should be registered under all circumstances)."
12. Director-General, Prisons, B L Soni, who was Additional DG (Crime) and then DG (Crime) between December 2018 and July 2020, said the chief minister's message was that "everybody can get a case registered. It was a bold decision by the CM that we will register every complaint. Earlier, when there were more cases, police station in-charge used to be pulled up and at the state level, the government used to take credit – look, we have reduced crime by x, y per cent. The premium was on not registering FIR. If you had 'reduced' crime, you were appreciated. Now reduction of crime is questioned. If you don't register (an FIR), you are pulled up: departmental proceedings were initiated against two dozen SHOs when they did not register a case and a fellow had to go to SP or IG or police HQ; and half a dozen SHOs were suspended. Even a few SPs were also pulled up."
13. All of this mainly started in May, 2019, post Lok Sabha elections. Soni says that the government also undertook "a large number of decoy operations" to see whether FIRs were being lodged at police stations.
14. There were a host of other measures undertaken by the government to make the process more transparent. In May 2019, following the Thanagazi gangrape case in Alwar, Gehlot announced that FIRs could directly be

registered with the SP's office if local police stations did not entertain a complaint. On July 1, 2019, the state government also made it mandatory to register every complaint on Crime and Criminal Tracking Network and Systems (CCTNS). "FIRs were being registered on CCTNS but now the difference was that every complaint should also be registered in the system," Soni said.

15. Following the **Thanagazi rape case** and no let-up in crime in the district, Alwar was divided into two separate police districts – Alwar and Bhiwadi – in August 2019.

16. "Also, earlier people used to approach the courts for registration of FIRs under CrPC 156(3). This saw a decline too from 28 % (in 2018) to 16 per cent in 2019 end, since cases were being freely lodged by the police,".

**So has the crime situation in Rajasthan worsened between 2018 and 2019?**

17. Registration of more cases doesn't necessarily mean that crime has increased. That also explains why Kerala has the highest rate of cognisable crimes in all of India. In Rajasthan, the police department's campaign to register every complaint has led to an increase in registration of FIRs in the state, and thus the overall drastic rise in figures between 2018 and 2019.

18. NCRB itself says that "the primary presumption that the upward swing in police data indicates an increase in crime and thus a reflection of the ineffectiveness of the police is fallacious. 'Rise in crime' and 'increase in registration of crime by police' are clearly two different things, a fact which is often confused. Thus an oft-repeated expectation from certain quarters that an effective police administration will be able to keep the crime figures low is misplaced. Increase in crime numbers in state police data may in fact be on account of certain citizen centric police initiatives, like launching of e-FIR facility or women Helpdesks, etc."

## TOPIC 9. LABOUR LAWS

### The story so far:

1. Three Codes on labour law were passed by Parliament this week, amid strident criticism and vociferous protests by many trade unions. Hailed by industry as a much-needed reform and rationalisation of labour laws, the Codes on industrial relations, social security, occupational safety, health and working conditions amalgamate and replace several diverse laws on the subject. Last year, a separate Code on Wages was enacted.
2. The Codes enacted now are modified versions of the Industrial Relations Code Bill introduced in 2019. Among these, the Industrial Relations Code is touted as one that would energise industry and spur economic activity, as it aims to free employees from the constraints of earlier labour laws.

### What are the main features of the Industrial Relations Code?

3. The Industrial Relations Code combines the features of three erstwhile laws — Trade Unions Act, 1926, the Industrial Employment (Standing Orders) Act, 1946, and the Industrial Disputes Act, 1947.
4. It defines 'workers' to include, besides all persons employed in a skilled or unskilled, manual, technical, operational and clerical capacity, supervisory staff drawing up to ₹18,000 a month as salary. It introduces 'fixed term employment', giving employers flexibility to hire workers based on requirement through a written contract.
5. Fixed term employees should be treated on a par with permanent workers in terms of hours of work, wages, allowances and other benefits, including statutory benefits such as gratuity.
6. The Code says any establishment that employs 300 or more workers must prepare standing orders relating to classification of workers, manner of intimating to them periods and hours of work, holidays, pay days etc, shifts, attendance, conditions for leave, termination of employment, or suspension, besides the means available for redress of grievances. Earlier, the 2019 Bill applied this to units with 100 employees or more.
7. The threshold has been raised to 300 in the 2020 Code. It confers on the 'appropriate Government', that is the Centre or the State governments, the power to exempt, with or without conditions, any industrial establishment or class of industrial establishments from all or any of the provisions of the Code, if it is satisfied that adequate provisions exist to fulfil its objectives.

### What does it say on trade unions?

8. Where there is more than one trade union in an establishment, sole negotiating union status will be given to one that has 51% of employees as its members. It has been brought down from 75% requirement in 2019 version.
9. Where no union qualifies under this criterion, the employer must constitute a 'negotiating council' consisting of representatives drawn from the various unions, with only those with at least 20% of employees as its members.

### What are the provisions on lay-off and closure?

10. The provisions that require the prior permission of the government for lay-off, retrenchment and closure are made applicable to only establishments that had employed 300 or more workers on an average per working day in the preceding 12 months.
11. The Code also allows the government to raise this threshold by notification. A lay-off would be deemed illegal if it is effected without permission or is done despite refusal of permission, but it will not be so if the employee had been offered alternative employment that does not require any special skill or cause undue hardship.
12. The Code prescribes notice period, or payment in lieu of notice period, and prior government permission before retrenchment of anyone who has been in continuous service for a year or more. Such a prior permission requirement is in place also for closure of a unit, with application to be filed 90 days prior to intended closure.

### How does the new Code affect the right to strike?

13. The Code prohibits strikes and lock-outs in all industrial establishments without notice. No unit shall go on strike in breach of contract without giving notice 60 days before the strike, or within 14 days of giving such a notice, or before the expiry of any date given in the notice for the strike.
14. Further, there should be no strike during any conciliation proceedings, or within seven days of the conclusion of such proceedings; or during proceedings before an industrial tribunal or 60 days after their conclusion or during arbitration proceedings. Similar restrictions have been given on the employer from announcing a lock-out.
15. The Industrial Disputes Act, 1947, had placed such restrictions on announcing strikes only in respect of public utility services. However, the present Code extends it to all establishments. Even the Standing Committee on Labour had favoured limiting these provisions to public utilities.

## TOPIC 10. CRIMES AGAINST SCHEDULED TRIBES

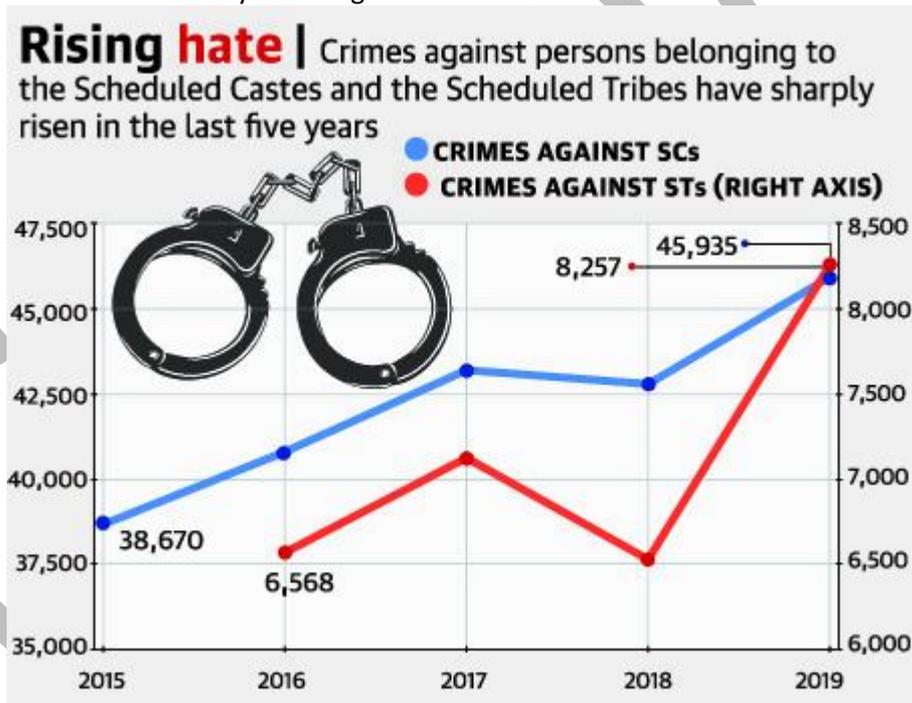
1. Crimes against members of the Scheduled Castes (SCs) and the Scheduled Tribes (STs) saw an increase of over 7% and 26% in 2019 compared with the 2018 figures, according to the annual Crime in India 2019 report published by the National Crime Records Bureau (NCRB) on Wednesday. Due to “non-receipt of data” from West Bengal for 2019, the 2018 data had been used to arrive at national and city-wise figures, the NCRB said.
2. A total of 45,935 cases were registered for committing crimes against the SCs, showing an increase of 7.3% over 2018 when 42,793 such cases were recorded. At 11,829 cases, Uttar Pradesh recorded the highest number of crimes against the SCs in 2019, followed by 6,794 cases in Rajasthan and 6,544 cases in Bihar, the report said.

### Rape cases

3. In the number of cases of rape of women belonging to the SCs, Rajasthan topped the list with 554, followed by Uttar Pradesh at 537 and Madhya Pradesh at 510.
4. A total of 8,257 cases were registered for crimes against the STs, an increase of 26.5% over 2018 when 6,528 such cases were registered. Madhya Pradesh recorded the highest number of cases against the STs as it recorded 1,922, followed by Rajasthan, which recorded 1,797 and Odisha 576. The highest number of incidents of rape of tribal women (358) was registered in Madhya Pradesh.
5. A total of 51,56,172 cognisable crimes, comprising 32,25,701 Indian Penal Code ones and 19,30,471 Special and Local Laws crimes were registered in 2019.
6. It showed an increase of 1.6% in registration of cases over 2018 (50,74,635 cases), the NCRB said. A total of 4,05,861 cases of crimes against women were registered in 2019 compared to 3,78,236 cases in 2018, showing an increase of 7.3%.

### CHRI statement

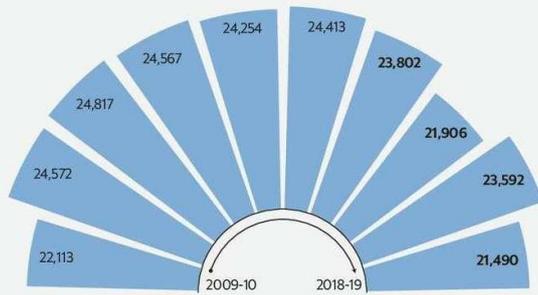
7. The Commonwealth Human Rights Initiative (CHRI), a police reforms advocacy group, said few cases were being registered for specific discriminatory action against the SCs and the STs.



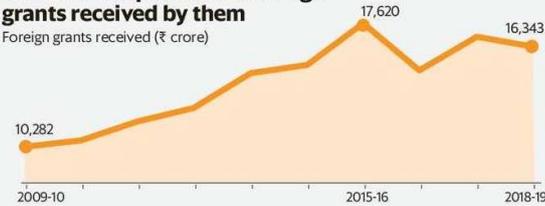
## TOPIC 11. FCRA

### MINT GRAPHITI

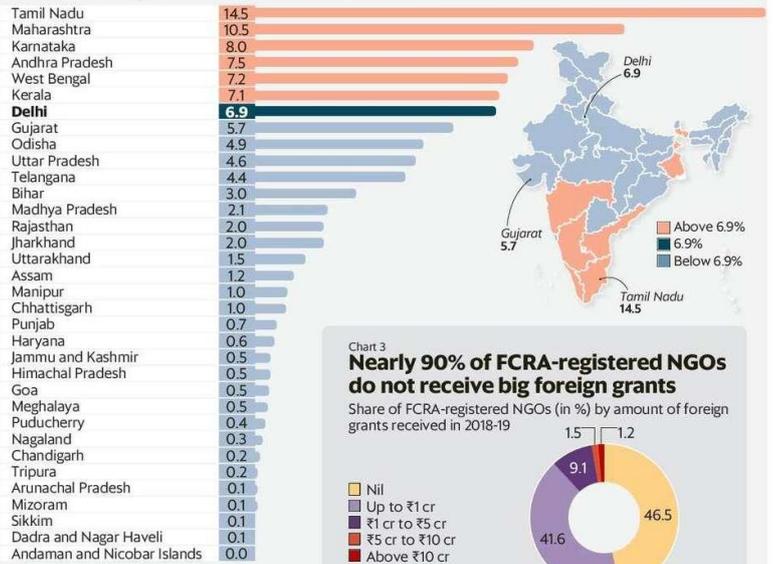
**Chart 1a**  
The number of FCRA-registered NGOs has declined under the NDA government...  
Number of NGOs that filed FCRA returns



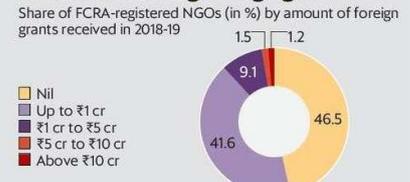
**Chart 1b**  
... as has the quantum of foreign grants received by them  
Foreign grants received (₹ crore)



**Chart 2**  
93% of FCRA NGOs are registered outside Delhi, and will now have to open a bank account in the capital as per latest norms  
% of FCRA NGOs registered in states/Union territories in 2018-19



**Chart 3**  
Nearly 90% of FCRA-registered NGOs do not receive big foreign grants  
Share of FCRA-registered NGOs (in %) by amount of foreign grants received in 2018-19



Source: 2019 report titled 'Estimating Philanthropic Capital in India' by the Centre for Social Impact and Philanthropy, Ashoka University

- Last week's amendments to the law that regulates foreign grants to non-government organizations (NGOs) continues the recent trend of the Centre making greater administrative demands on them, increasing their cost of compliance. The Centre says the changes are aimed at "strengthening the compliance mechanism, enhancing transparency and accountability" in a key funding source for the NGO sector. Civil society says the new regulations are ill-conceived and only add to the difficulty of their functioning.
- Three amendments in particular have riled NGOs: opening a pass-through bank account in a specified branch in New Delhi, stopping NGOs from transferring foreign grants to other registered NGOs, and the lower cap on administrative expenses. Each has significant financial and compliance implications for NGOs.
- Foreign grants received by NGOs are regulated by the Foreign Contribution (Regulation) Act, 2010, or FCRA. In order to receive foreign funds, an NGO has to register with the ministry of home affairs. It is assigned a unique FCRA registration number, to be renewed every five years.
- Under the current regime at the Centre, renewal has become more difficult, NGOs say. In 2015, the Centre increased e-filing requirements. NGOs had to make quarterly filings of foreign grants received. They also had to notify within 15 days any changes in bank account, name, address, aims, objectives and key functionaries.
- Around the same time, the Centre started weeding out duplicate FCRA registration numbers—over time, several NGOs had accumulated more than one registration number. In 2019, the Centre for Social Impact and Philanthropy (CSIP), Ashoka University, did a deep-dive into the FCRA database as part of a report titled *Estimating Philanthropic Capital In India*. This study showed that the Centre cancelled 10,069 FCRA registrations in 2015 and another 4,943 in 2017. (Disclosure: *Howindialives.com* was the data partner to CSIP, Ashoka University, in the above-mentioned study.)
- The impression that went out was large-scale violations and NGOs being barred en masse from accessing foreign funds. But this purge was mostly the cancellation of duplicate numbers. However, along with it also came instances of NGOs being barred from accessing foreign grants, and an increase in compliance requirements and scrutiny. This has impacted the number of FCRA-registered NGOs and the amount of foreign funds raised by them in recent years (*see charts 1a and 1b*).
- The latest set of changes add to this feeling of siege. The first change is that every FCRA-registered NGO will have to open an FCRA-marked bank account with a designated branch of State Bank of India in New Delhi. These accounts will be the point of entry for all foreign grants. NGOs can subsequently route these funds to their existing FCRA-marked accounts across the country.
- The second change is stopping the practice of an FCRA NGO transferring foreign grants received by it to other FCRA NGOs. NGOs cite such re-transfers as mutually beneficial. It leverages the spirit of collaboration that is

typical of civil society. Large NGOs can also work with smaller NGOs, who work on the ground but can't raise foreign funds on scale by themselves.

9. In 2018-19, according to CSIP, 4,107 NGOs registered in 380 districts—or about one in five FCRA NGOs—received such re-grants. The total amount transferred was ₹1,768 crore and the median transfer value was ₹7.6 lakh. In other words, half the 4,107 NGOs received a re-grant of less than ₹7.6 lakh. The Centre is now seeking to shut this route.
10. A majority of FCRA NGOs don't receive big foreign grants. About 46.5% of these 21,490 NGOs did not receive any foreign grants in 2018-19. Another 41.6% received foreign grants only up to ₹1 crore. The sector received ₹16,343 crore in 2018-19, which is 5% of what Indian companies received through foreign direct investment (FDI) that same year. They are now being asked to bear an additional cost of compliance (**see chart 3**).
11. The third change is lowering the cap on administrative expenses from 50% of foreign funds received to 20%. NGOs say this is needless micro-management and cost structures vary from project to project. It is particularly difficult for NGOs whose work revolves around advocacy rather than projects. In 2018-19, there were 1,328 NGOs whose administrative expenses exceeded 20% of their total foreign funds.
12. NGOs say the new rules place more discretionary powers in the hands of bureaucrats and increase their compliance burden. And it will further widen the trust deficit between NGOs and the Centre.

## TOPIC 12. LABOUR CODE



1. The new labour laws are meant to make doing business easier in India. Naturally, the industry has been lobbying for these amendments and they have gotten their way. Workers, meanwhile, have been urging caution, since major changes could leave them totally vulnerable. In an attempt at finding some degree of balance, the new laws do talk about a range of worker rights, from mandatory health check-ups, home visits and emergency aid to written terms for employment.

**But the real question is: Will these new codes make any significant difference to India's diverse and complicated labour markets?**

2. In developing countries like India, labour has historically been unskilled, unempowered and immobile. In the first two decades of economic liberalization, the availability of skilled and unskilled labour enabled India's fast-paced economic growth. Now, with growth petering out and unemployment rising, the increase in the supply of young labour is causing huge distress to the political economy of reforms.
3. That is why there is a deep and renewed interest in amending labour law legislation. The states of Madhya Pradesh and Uttar Pradesh had already suspended labour law protection within their territorial boundaries for three years beginning in May this year, and faced no problems doing so.
4. But since this push is merely a few months old, it may be more relevant to in fact look at the model put in place by states which went down this path several years ago: Rajasthan and Gujarat. The early indications are not very encouraging, but it is first essential to understand the exact nature of the new deal that is being offered to India's labour.

### **The changes**

5. Last week, the Parliament passed wide-ranging amendments to labour laws after a round of discussions with various stakeholders over the last two years. In fact, it was in 2003 that these reforms were originally suggested. So, it has taken 17 years to see the light of day. These laws will now be notified and then the labour ministry will start framing rules and guidelines, which clarify many of the new provisions. It is expected that these laws will get implemented early next year.
6. Broadly, the changes that have been made are these: Hiring and firing becomes easier now, striking work gets more difficult, trade unions will get pushed to the margins, fixed-term employment enters the picture and a rudimentary security net will now cover sections of the unorganized workforce.
7. The new law on social security brings together the provident fund (PF), the employees' state insurance (ESI), maternity benefits, gratuity and other entitlements under a simplified single law. The second law on occupational safety similarly brings together all laws relating to health and hazardous working conditions. It pins liability on the employer and the contractor and makes PDS benefits transferable for migrant workers. It also stipulates toll-free numbers and assistance cells to help free bonded labour.

8. The third law, which is the Industrial Relations Code of 2020, has redefined the terms “employer”, “employee” and “worker”. It has also given a new definition for “strike” that now includes mass casual leave by 50% of the workforce employed by any firm.
9. Twenty-nine different central laws have been merged into three. A fourth code on minimum wages was passed last year. Therefore, a total of 44 extant laws have now been rolled into four. This is not the end of the story though, as labour is a concurrent subject and the 100-odd state level acts that exist now will also be rationalized given this precedent set by the Union government. The labour minister informed parliament that 16 states have already brought in most of the changes which have been newly incorporated under the four labour codes.
10. The context to these changes is important. Apart from the dwindling GDP growth rate—which had declined even before the pandemic from 7.5% in 2014 to 5% in 2019—India is going to enter a decade in which the number of people newly entering the workforce each year will remain high. India’s population should surpass China’s in about seven years and for the next ten years, at least 10 million youth will enter workforce each year.
11. There are 900 million Indians in the working age population of 15-64 years already and with this additional annual increase, India’s supply of labour will keep increasing, thereby keeping labour costs low for a long time. At the moment, there are around 500 million crore workers in the country, including 100 million that are employed in the organised sector.
12. In order to make hiring easier, the law now prescribes a single licence for staffing firms to hire contract workers across different locations instead of the erstwhile regime of multiple location-specific licences. Besides, it has increased the threshold limit of contractor employees from the earlier norm of 20 to 50.
13. The occupational, safety, health and working condition (OSH&WC) code also provides for full-fledged surveys on migrant workers, for which the centre will source data from various agencies and states. A National Social Security Board will be set up for formulating suitable schemes for unorganized workers, gig workers and platform workers. It also brings these sections of workers under the ambit of social security schemes that include life and disability insurance, PF, health and maternity benefits and skill upgradation. The code also proposes the formation of a social security fund.
14. Interestingly, this benefit has been tied to an attempt to delegitimise strikes, which finds a mention in the Industrial Relations Code. Several startling clauses in the code effectively create a legal regime where strikes are impossible and workers will no longer be free to organise or even participate in peaceful strikes. They will be penalised for doing so and the penalties collected will be used to maintain the social security fund.

#### **The simmering concerns**

15. The government has made a strong claim that the laws are pro-worker and will provide statutory protection to unorganized workers. The intention is that these new laws will ensure social security, non-hazardous work conditions and higher minimum wages.
16. However, scepticism creeps in due to a variety of reasons. Fixed-term contracts, for example, are going to take away all protections from those who can now be given short-term assignments. The informal construction sector that employs the largest number of unskilled workers will also now be free to use labour at will.
17. Social security protections should have been uniformly applicable to the entire Indian workforce. Instead, we now have arbitrary categorisations that leave millions of working poor out. Only sites that have more than 10 workers will be covered by the law. Also, “personal residential construction work” is excluded and these are the places where a bulk of our unorganized workers find employment and need protection.
18. The parliamentary standing committee had recommended the removal of the definition of a “wage worker” as it excludes many of those at the margins. However, the wage ceiling to fall within the definition of a wage worker exists and will again be used arbitrarily across states.
19. Safety at the workplace has been highlighted, but the provisions are extremely weak. Most of our unorganized labourers work in small establishments and in small groups. The safety committee that the new law seeks to put in place will only be applicable to workplaces that hire more than 250 employees. This means 90% of our labour is left out. Also, the liability of the employer in case of death due to workplace accidents is paltry, at ₹100,000. This is in spite of the fact that the workplace in India is extremely dangerous and kills more than 40,000 workers every year. Safety measures, even if they are superficially in place, are appalling. It was important to fix criminal liability on employers who flout workplace safety norms, resulting in death and injury.
20. Several small firms, which hire nearly 90% of India’s workforce, now have complete impunity in hiring and firing employees. These are firms that hire less than 300 workers. Gig workers have not been identified as unorganized workers, and this category is the most vulnerable.
21. The categories of self-employed, piece-rate workers and home-based workers are simply not covered under any social security mechanism. Inter-state migrants have found mention in the new acts, perhaps due to the

shameful tragedy which unfolded after millions were forced to walk back home due to the lockdown. However, nearly 80% of the country's migrants are intra-state workers and they find no mention in the new law.

#### The lesson from states

22. There is a real-world setting where the effects of some of these labour law changes are already visible, since states like Gujarat and Rajasthan had gone down this path several years ago. The Modi government heralded the changes made by the Vasundhara Raje-led administration in Rajasthan in its 2019 Economic Survey but failed to note the wider impact that these laws have had in the state.
23. Workers continue to be underpaid, are as vulnerable as they were, and wage rates have stagnated. The state's unemployment rate steadily went up and is now among the highest in the country (10.6% while the national average is around 7.5%). The most significant fallout has been the increase in the number of contract workers, who account for about 43% of Rajasthan's organized workforce.
24. Almost in step with this rise in contractualization, labour productivity has also increased. Therefore, the employers are celebrating. Increase in per capita output without a commensurate increase in wages is after all ideal for a firm as it becomes more competitive.
25. In Gujarat, the state's Industrial Disputes Act of 2004 and the SEZ Act exempted the Special Economic Zones from all national labour law stipulations. The Industrial Disputes Act was also diluted and employers could dismiss workers without bureaucratic approvals. This was viewed as being instrumental to Gujarat gaining access to a great deal of private investment, which turned the state into a major manufacturing hub. But apart from these legal changes, the state had also granted fiscal incentives by way of tax holidays, cheap land and other subsidies. It is not clear at all whether it was the dilution of labour protection laws or the freebies which brought in the new investors. It is important to note that Gujarat also saw some serious worker agitations and strikes as the laws got diluted.
26. The essential point to note is that the scientific literature on labour market flexibility is still not very conclusive. It is true that India's labour laws were indeed very rigid and did contribute to keeping firm sizes small. However, the answer is to not simply just change the law and do nothing else. It is important to ensure that the state focuses on building support institutions for skilling and apprenticeship, and also guarantees social security and basic incomes. Those measures will mitigate labour market risks which are inherent in any economy's transition into a modern and formal economy.
27. Merely tinkering with the laws will neither advance labour welfare nor improve economic activity. Importing laws that are predicated upon the existence of a formal sub-structure on an economy that is based on part-time employment, seasonal work and land parcels owned by the family is set up for failure.
28. The problem is that our workers are far too vulnerable and poorly paid to be able to afford disproportionate increases in productivity and decreases in real wages. Labour law reform must first address the marginal informal worker who works in difficult circumstances; gets paid lower than even the minimum wage in most circumstances; has no social security and is often rendered unemployed.
29. The chronology for labour law reform should have been the worker first and productivity and mobility next. Instead, as the Rajasthan case shows, several firms may now show great alacrity in using the flexibility that has been granted to quickly reduce their workforce and get contract employees to work harder and for longer hours. Ultimately, it is indeed the intention of the law that matters more than the words.

## TOPIC 13. DEFENCE OFFSETS



1. The Defence Ministry came up with its latest **Defence Acquisition Procedure 2020 (DAP 2020)** on Monday, which comes into effect from Thursday, October 1. **Changing a 15-year old policy**, the government has decided to **remove the clause for offsets** if the equipment is being bought either through deals or agreements between two countries, or through an ab initio single-vendor deal.

### What are defence offsets?

2. In simplest terms, the offset is an obligation by an international player to boost India's domestic defence industry if India is buying defence equipment from it. Since defence contracts are costly, the government wants part of that money either to benefit the Indian industry, or to allow the country to gain in terms of technology.
3. The Comptroller and Auditor General (CAG), in a report submitted on September 23, defined offsets as a "mechanism generally established with the triple objectives of: (a) partially compensating for a significant outflow of a buyer country's resources in a large purchase of foreign goods (b) facilitating induction of technology and (c) adding capacities and capabilities of domestic industry".
4. An offset provision in a contract makes it obligatory on supplier to either "reverse purchase, execute export orders or invest in local industry or in research and development" in buyer's domestic industry, according to CAG.

### When was the policy introduced?

5. Amit Cowshish, a former Financial Advisor to the Defence Ministry, who retired in 2012 and continues to be part of the Manohar Parrikar Institute for Defence Studies and Analysis, said the policy was adopted on the recommendations of the Vijay Kelkar Committee in 2005.
6. "The idea was that since we have been buying a lot of defence equipment from foreign countries, so that we can leverage our buying power by making them discharge offset obligations, which is the norm world over," Cowshish said. "The first policy said that all defence procurements exceeding Rs 300 crore, estimated cost, will entail offset obligations of at least 30%, which could be increased or decreased by the DAC (Defence Acquisition Council)," Cowshish said.
7. The Sixth Standing Committee on Defence (2005-06) had recommended in December 2005 in its report on Defence Procurement Policy and Procedure that modalities for implementation of offset contracts should be worked out.
8. The first offset contract was signed in 2007.
9. The government stated the "objective for defence offsets" for the first time on August 1, 2012: "The key objective of the Defence Offset Policy is to leverage capital acquisitions to develop Indian defence industry by (i) fostering development of internationally competitive enterprises, (ii) augmenting capacity for Research, Design and Development related to defence products and services and (iii) encouraging development of synergistic sectors like civil aerospace, and internal security".

### How can a foreign vendor fulfil its offset obligations?

10. There are multiple routes. Until 2016, the vendor had to declare around the time of signing the contract the details about how it will go about it. In April 2016, the new policy amended it to allow it to provide it "either at the time of seeking offset credits or one year prior to discharge of offset obligations".
11. The August 2012 Defence Ministry note mentioned these avenues
  - Direct purchase of, or executing export orders for, eligible products manufactured by, or services provided by Indian enterprises
  - Foreign Direct Investment in joint ventures with Indian enterprises (equity investment) for eligible products and services

- Investment in 'kind' in terms of transfer of technology (TOT) to Indian enterprises, through joint ventures or through the non-equity route for eligible products and services
- Investment in 'kind' in Indian enterprises in terms of provision of equipment through the non-equity route for manufacture and/or maintenance of products and services
- Provision of equipment and/or TOT to government institutions and establishments engaged in the manufacture and/or maintenance of eligible products, and provision of eligible services, including DRDO (as distinct from Indian enterprises).
- Technology acquisition by DRDO in areas of high technology.

12. Cowshish said the 2012 note also introduced offset banking and multipliers. "Banking means that in anticipation of getting a contract from the Defence Ministry, a vendor could discharge offsets and earn the credit which could be banked. Later on, if you got the contract, you could use the banked credits, subject to certain conditions." He said.

13. For multipliers, Cowshish said, "if you discharge offset obligation by taking an MSME unit as an IOP (Indian Offset Partner for the foreign vendor), you get the multiplier of 1.5, which is to say if you discharge an offset obligation of Rs 100, but your IOP is an MSME unit, you will get an offset credit of Rs 150".

14. The DAP 2020 has given transfer of critical technology to DRDO the highest multiplier of 4.

#### **Will no defence contracts have offset clauses now?**

15. Only government-to-government agreements (G2G), ab initio single vendor contracts or inter-governmental agreements (IGA) will not have offset clauses anymore. For example, the deal to buy 36 Rafale fighter jets, signed between the Indian and French governments in 2016, was an IGA.

16. "Ab initio single vendor means that when you start the process you have only one vendor... There can be a situation when you start with two or three vendors and issue Request for Proposals (RFP) to them, and are left with a single vendor, which is called a resultant single vendor situation," Cowshish said. The Defence Ministry issues the RFP to only one vendor.

17. IGA is an agreement between two countries, and could be an umbrella contract, under which you can go on signing individual contracts, Cowshish said. G2G is transaction specific, or an acquisition specific agreement.

18. According to DAP 2020, all other international deals that are competitive, and have multiple vendors vying for it, will continue to have a 30% offset clause.

#### **Why was the clause removed?**

19. Apurva Chandra, Director General of Acquisitions, said Monday that vendors would "load" extra cost in the contract to balance the costs, and doing away with the offsets can bring down the costs in such contracts.

20. Sources explained that there are "administrative costs" involved in discharging offset obligations, which the vendors pay.

21. Chandra had also mentioned recent CAG criticism.

#### **What has the CAG said?**

22. The CAG has been critical of the entire policy. From the first contract signed in 2007 until March 2018, CAG said, 46 offset contracts have been signed for Rs 66,427 crore. "On the whole, from 2007 till December 2018. Rs 19,223 crore worth of offsets should have been discharged. However, the claimed discharge of the offset obligation by the vendors till December 2018 was Rs 11,396 crore. This was only 59 per cent of the offsets which were due by December 2018."

23. It said the relevant authority had accepted claims of only Rs 5,457 crore out of the Rs 11,396 crore and rest are either pending or rejected. "The remaining offset obligation of about Rs 55,000 crore is due to be completed by 2024". The CAG is not very hopeful of the obligations being met by 2024. It said the audit "found that the foreign vendors made various offset commitments to qualify for the main supply contract but later, were not earnest about fulfilling these commitments".

24. The CAG had not found "a single case where the foreign vendor had transferred high technology to the Indian industry".

#### **The story so far: On**

25. Monday, the new Defence Acquisition Procedure (DAP) 2020 was released. Among other things, the Defence Ministry has removed the offset clause requirement in inter-governmental agreements (IGA) and has introduced a new category for leasing of military equipment.

#### **What purpose does an offset clause serve?**

26. A defence offset policy was promulgated under the Defence Procurement Procedure (DPP-2005), with the objective that it would bring high-end technology to the country and help build the domestic defence industry. Under the offset clause, a foreign company that wins a defence deal is supposed to invest a part of the contract value in the country, thus developing skills and bringing in technology, while also generating employment.
27. Under the DPP 2006, the offset value was fixed at 30% of defence deals above ₹300 crore, which was revised to ₹2,000 crore in DPP 2016 for full-import deals. The first offset contract was signed in 2007.
28. Auditing the offset deals till March 2018, the Comptroller and Auditor General (CAG) said 46 offset contracts were signed for ₹66,427 crore, and till December 2018, ₹19,223 crore worth of offsets should have been discharged. "However, the vendors have claimed discharge of only ₹11,396 crore, [i.e.,] 59%, of the offsets," stated a report tabled in Parliament on September 23. Furthermore, the Ministry has accepted only ₹5,457 crore or 48% of these offset claims, while the rest were pending or rejected due to various deficiencies. The remaining offset commitments of about ₹55,000 crore would be due for completion by 2024, but the rate of the offset discharge has been about ₹1,300 crore per year. "Given this situation, fulfilling the commitment of ₹55,000 crore by the vendors in the next six years remains a major challenge," the report said.

#### **What did the CAG say on the Rafale deal offsets?**

29. The IGA of the ₹60,000-crore deal for 36 Rafale fighter jets stated that the French side would facilitate implementation of 'Make in India' through offsets for 50% value of supply protocols, minus the value of performance-based logistics and simulator and training aids annual maintenance. The CAG said the French aircraft manufacturer, Dassault Aviation, and missile maker MBDA have till date "not confirmed" the transfer of technology to the Defence Research and Development Organisation (DRDO) under the offset clause.
30. According to the report, in September 2015, French companies Dassault Aviation and MBDA initially proposed to discharge 30% of their offset obligation in the Rafale deal by offering high technology to the DRDO, and as per the contract, acquisition of technology by the DRDO is envisaged subject to discussions between the vendor and the DRDO. In April 2016, the DRDO identified six new technologies to be obtained from the firms under the offset obligations, but the vendors "did not agree on transfer of five technologies as most of them were not within the vendor's core competence".
31. The sixth proposal of the DRDO was to obtain technical assistance for indigenous development of an engine, Kaveri, for the Light Combat Aircraft (LCA). Stating that in October 2019, the Ministry of Defence (MoD) had informed them that the vendor had not yet been able to confirm their capability for doing the requisite upgradation, the CAG said, "thus, it is not clear if this technology transfer will take place, and there is need for MoD/DRDO to identify and acquire the right technologies in order to comply with the directions of Defence Acquisition Council (DAC) given in September 2016."
32. The MoD informed the CAG that the offset obligations under the Rafale deal were to start from September 23, 2019, and the first annual commitment would have to be completed by September 23, 2020. The CAG noted that the maximum discharge of offsets — 57% by MBDA and 58% by Dassault Aviation — had been slated during the last year, which is year seven from the date of contract.
33. Giving the Rafale deal as a reference, the report said, "In many cases, it was found that the foreign vendors made various offset commitments to qualify for the main supply contract, but later were not earnest about fulfilling these commitments."

#### **What is the status now?**

34. In the new DAP 2020, which came into effect on October 1, the government has removed the requirement for offset clause in IGAs or in Rafale-like deals. "We removed some of the offset requirements as they are not working. From now on, there will be no offset clause in government-to-government, single vendor and IGAs," said Director General (Acquisition), Apurva Chandra.

## TOPIC 14. ARTILLERY IN INDIAN ARMY

1. The Regiment of Artillery of **Indian Army celebrated the 193<sup>rd</sup> Gunners Day** on September 28 marking date in 1827 when Five Bombay Mountain Battery, equipped with 2.5 inch guns, was raised in the British Indian Army.

### **The Artillery and its Gunners**

2. One of the basic warfare lessons is that greater the distance from which one can target the enemy, greater the flexibility one can achieve for ground manoeuvres. From the catapults and cannons used in ancient times, the evolution of mechanical projectiles, to the modern day artillery guns which are integrated with network centric warfare, the role of gunners has always been a winning factor in the battlefield, proving to be a crucial support system to the other fighting arms.
3. The artilleries of Mughals, Marathas and those of Sikh armies among other historic entities have played a major role in their successful campaigns. The foundation of the Regiment of Artillery was laid on September 28 in 1827 when Bombay Artillery, later renamed 5 Bombay Mountain Battery, was raised. This day is celebrated by the Regiment of Artillery as Gunners Day.
4. In May 1857, the mutiny by Indian soldiers started in the artillery of the Army of the Bengal Presidency. The incident prompted a complete ban on Indian artillery units, except the mountain artillery batteries in select provinces. The decision was reversed in the mid-1930s when the first of the field regiments — which support the other formations on the field — of the Indian Army were raised.
5. With the motto 'Sarvatra Izzat-O-Iqbal – Everywhere with Honour and Glory', the regiment boasts of one Victoria Cross, one Distinguished Service Order, 15 Military Crosses during the pre-independence era and one Ashok Chakra, seven Maha Vir Chakras, nine Kirti Chakras, 101 Vir Chakras, 63 Shaurya Chakras, six Bar to Sena Medal, 485 Sena Medals besides many other decorations.

### **The present day Artillery**

6. Today, the Artillery of Indian Army consists of a dynamic inventory which ranges from Ballistic Missile, Multi-Barrel Rocket launchers, High Mobility Guns, Mortars Precision Guided Munitions for destruction of enemy targets to Radars, UAVs and Electro optic devices for locating and carrying out Post Strike Damage Assessment (PSDA). The Regiment of Artillery has played a key role in all the post independence conflicts with the neighbours including the Kargil War.
7. The importance of the artillery in conventional warfare remains intact, especially with the artillery guns playing a major role in the 'Integrated battle groups'. These battle groups are formations comprising artillery, mechanised infantry and armoured and infantry elements along with the modern day force multipliers like UAVs and electronic warfare systems. The artillery fire can be used for suppressive and destructive purposes to get an upper hand over the enemy.
8. Around 30 years after the acquisition of the Bofors guns in 1980s which proved decisive in Kargil war, two more artillery guns — the K9 Vajra of the Indian-South Korean make and US sourced M777 Ultra Light Howitzers — were inducted into the Indian Army in 2018. While Defence Research and Development Organisation's (DRDO) Dhanush is in the pipeline for induction, its Advanced Towed Artillery Gun System (ATAGS) is in its trial stages.

### **The evolving role of the Artillery**

9. Along with its role in conventional battlefield, artillery is extensively being deployed and used in the counter insurgency (CI) battles. Earlier the artillery used to be avoided in counter insurgency operations because of the concern of the collateral damage, but with the advent of precision ammunition, its role has attained a lot of importance. Artillery formations have been deployed in counter insurgency operations in Jammu and Kashmir as well as the north eastern theatre by the Indian Army.
10. With the introduction of self-propelled and automated artillery weapon systems, the footprint of artillery has reduced because of removal of ancillary systems. These advancements have also helped in increasing the survivability of the systems against the enemy fire because their ability to manoeuvre in all types of terrains has also increased. The introduction of 'force multipliers' like satellite communication, UAVs, networked electronic systems and artificial intelligence have increased the efficacy of artillery and have again underlined its role as a decisive arm on the battlefield.

## TOPIC 15. AIR FORCE DAY

1. The Indian Air Force celebrated the 88th Air Force Day on Thursday, October 8. The day is being marked by the main event comprising a parade and flypast at Hindon Air Force Base along with events at IAF establishments across the country — this time with many restrictions due to the pandemic.
2. A look at why the day is celebrated, the traditions attached with it and its significance.

### **Air Force Day, October 8**

3. October 8 is celebrated as the Air Force Day because on this day, the Air Force in India was officially raised in 1932 as the supporting force of the Royal Air Force of the United Kingdom. The first operational squadron came into being in April 1933. After participation in World War II, the Air Force in India came to be called the Royal Indian Air Force in the mid 1940s. In 1950, after the republic came into being it became the Indian Air Force. From six officers and 19 Hawai Sepoys back in 1933, the Air Force now is the fourth largest in the world.
4. For several decades until 2005-06, the Air Force Day used to be marked by the main event, parade and flypast at Palam. But due to the increasing air traffic issues, it was shifted to Hindon Air Force Base in Ghaziabad which is home to two squadrons of transport aircraft and a helicopter unit among other establishments. The flypasts and displays on the occasion have traditionally showcased the in service aircraft and systems of the Air Force.

### **Events and traditions of Air Force Day**

5. The main event at the Hindon Air Force Base comprises a parade by men and women air warriors. It also has an investiture ceremony where medals are pinned by the Chief of Air Staff (CAS) on uniforms of those who have been declared recipients. Every year, apart from being televised, the event is also attended by a large number of serving and retired brass, air warriors and their families and citizens. This year number of attendees will be much less due to COVID restrictions in place. CAS Air Chief Marshal RKS Bhadauria will review parade on Thursday.
6. The day's celebrations also traditionally include an 'at home' reception hosted by the CAS, which is attended by top leaders of the government and brass. "Apart from parade, awarding of medals and flypast, one key feature of the function is speech of the Air Force Chief. Where the chief not only addresses the air warriors but also the nation. In this speech the Air Chief touches upon the existing situation and tries to present a roadmap. It's a day when brave men and women air warriors reaffirm their resolve to protect the nation."
7. The flypast consists of display of various fixed wing aircrafts and helicopters along with aerobatics display. A full dressed rehearsal of the event was held on Tuesday. This year, the Tejas LCA, Mig-29 and 21 and Sukhoi-30 along with newly inducted Rafale jets will be on show. It will also have helicopters like the Mi17V5, Chinook, Mi-35, ALH Rudra and Apache and transport aircraft like C-17 Globemaster, C-130, IL-76 Gajraj among others. Suryakiran fixed wing aerobatic team and Sarang helicopter aerobatic team will also be key attractions.
8. At IAF stations across the country, event is marked by various functions including a gathering of IAF veterans from area and a bada khana for the personnel of units stationed. This year, while gatherings of veterans have been put on hold in most of the formations, other celebrations have also been scaled down due to pandemic.

### **Significance of Air Force Day and message**

9. Apart from the importance of the day for the celebration of the history and traditions, the parade and flypast also have importance as a strategic signal. Former Vice Chief of Air Staff Air Marshal Bhushan Gokhale (Retd) said, "On one hand Air Force Day is when air warriors — an apt and inclusive term coined by Air Chief Marshal AY Tipnis — look back and take stock of the situation and look ahead into the future. On the other hand, the immaculate parades and breathtaking displays are a strategic message, to the citizens of the country assuring that they are safe hands and also to the adversaries." Air Marshal Gokhale added, "Its a day to pay tribute to countless sacrifices made by air warriors in not just in safeguarding the skies but also in numerous humanitarian aid and disaster relief operations taken up till now and in the days to come."

## TOPIC 16. INDIAN AIR FORCE IN EASTERN LADAKH

1. With a resolution to the standoff on the LAC still elusive, the Indian Army is preparing for extended deployment of troops in the region through the winter months. This leaves the IAF with a key role in providing support to the troops. What are the challenges to meet in the harsh winter and tough terrain?

### **Can the IAF support the logistics of such a large force?**

2. One part of the logistics for the Army requires land transportation, which would have been planned for before winter sets in and the passes close. The IAF will be doing very urgent missions, for which it is well prepared with a very good transport fleet consisting of C-17 Globemasters, Il-76s, and many An-32s. If it comes to the crunch, the C-130 Super Hercules can also be used for logistics support, although these are meant for special operations.
3. We also have Mi-17 helicopters and Cheetal light helicopters to cater to forward posts. In addition, the Chinook heavy-lift helicopters will be used for carrying bulky stores, either within the fuselage, or slung under it.

### **What are topographical challenges of flying into Leh or other advanced landing grounds (ALGs) in Eastern Ladakh?**

4. The biggest challenge is the altitude of the two airfields of Leh and Thoise, but since we have been flying there for decades, the air crew are well aware of the peculiarities of these fields.
5. The landing grounds at high altitude have their own challenges, which result in reduction of load-bearing capacity of the planes/choppers. Additionally, the air crew have to call upon their skills to navigate the hills and land on the small, matchbox-like helipads — there is just no place on these hills to make bigger ones!

### **What additional hazards will winter bring?**

6. Bad weather that accompanies the western disturbances that strike northern India in the winter months is a challenge, as it reduces visibility and results in a low cloud base. So the crew have to be on the ball to make sure they can find a way to circumvent bad weather. This is not always possible, and we have long periods when flying has to be curtailed.

### **And what effect does extreme cold have on weight-carrying aircraft?**

7. The lower the temperature, the better the payload because the higher air density increases the lift-carrying capability of flying machines. So the loads that can be carried during winter are higher than during summer.
8. This is a big advantage. For instance, an Il-76, which in summer can carry hardly any load from Leh, can fly out around 20 tonnes in winter. It is same with helicopters, whose load-carrying ability to extremely high helipads at altitudes of 17,000 to 20,000 feet increases substantially in winter. And it reduces drastically in summer.

### **Do the high altitude and topography pose a challenge to navigation and night flying?**

9. The modern navigation equipment available now overcome most of the challenges. But mission accomplishment is not merely flying from place A to B. The aircraft has to land to complete a mission. That is where temperature and altitude plus weather become the final arbiters.
10. Navigation is not a problem, but take-offs and landings are tricky.
11. As for night flying, it has its own unique challenges because of the shadows cast by hills, as well as the state and position of the moon relative to the hills and the aircraft. A dark, moonless night poses its own challenges, and a full moon has its own. In the hills, air crew are specially cleared to carry out operations at night.

### **Do the airfields in Ladakh restrict operations to only certain aircraft or can all aircraft be used?**

12. All air fields in the Ladakh area can be used by the transport aircraft we have, although weather requirements will vary from one aircraft to the other. It depends on the navigational aids on board the aircraft, and the competence of the crew. That is why air crews are detailed depending on the mission.

### **In a long haul, or in the eventuality of a kinetic war, the IAF will also have to transport back and forth mechanised weapons etc for repair, maintenance, etc. Can our aircraft profile cater to it?**

13. Bringing back loads from the forward air fields is not a problem. However, that has to be prioritised vis-à-vis personnel, casualties, and vital equipment such as avionics.

### **What kind of logistics support in terms of fuel, repair, etc does the IAF require for such an operation?**

14. All the air fields have enough stock of fuel, oil, and lubricants (FOL) for which detailed planning is done around the clock. There is a well-oiled logistics chain that has been fine-tuned by the IAF in the last six-seven decades of operation. The Army Service Corps (ASC) also plays an important part in ground positioning of fuel in forward posts. It places aviation turbine fuel in barrels in advanced fields, while Leh and Thoise have got fuel bowsers.

### **What is the threat to aircraft when the ground forces are eyeball to eyeball?**

15. The airfields of Leh and Thoise that support fixed wing operations (helicopters are rotary wing aircraft) are relatively in interiors, hence not vulnerable to any ground action. They can of course be attacked by Air Force and other aerial assets of adversary, but there are standard operating protocols in place to deal with such threats.

16. However, in ALGs such as **Daulat Beg Oldie** (DBO), where choppers fly close to the LAC, the air crew are well adept at taking tactical action to meet any threat from ground fire or shoulder-fired missiles. In this, the aids on board the helicopters also play an important role.

**Are there any special challenges for fighter aircraft?**

17. Fighters flying in those altitudes have special challenges of their own because of their high speeds, reduced air density, closeness of hill tops, and the fact that targets are very small comprising bunkers having limited numbers of troops.

18. Hitting those targets requires special weapons and air crew capability. Luckily, we have experienced this during Kargil, and I am sure the lessons would have been passed on to the present band of fighter pilots.

**Where does Rafale fit in?**

19. The **Rafale** comes with its unique flying characteristics and weapons delivery payload, but one must remember that present-day combat is between systems, and not generally between one aircraft and the other.

20. The Rafale would have been dovetailed into the air campaign plan made by the IAF to operate with other systems like Airborne Warning And Control System (AWACS) and electronic warfare (EW) assets. In the present day, an individual weapon system is only as good as the overall war fighting architecture that the force designs.

## TOPIC 17. SMART TEST

1. On Monday, India successfully conducted the flight test of a Supersonic Missile Assisted Release of Torpedo (SMART) system developed by the Defence Research and Development Organisation (DRDO).

### **What is SMART system?**

2. Torpedoes, self-propelled weapons that travel underwater to hit a target, are limited by their range. In the mid-2010s, DRDO undertook a project to build capacity to launch torpedoes assisted by missiles; Monday's was the first known flight test of the system.
3. This SMART system comprises a mechanism by which the torpedo is launched from a supersonic missile system with modifications that would take the torpedo to a far longer range than its own. For example, a torpedo with a range of a few kilometres can be sent a distance to the tune of 1000 km by the missile system from where the torpedo is launched.
4. The system also gives flexibility in terms of the missile system's launch platform, DRDO officials said. A number of DRDO laboratories including Defence Research and Development Laboratory (DRDL) and Research Centre Imarat (RCI), both in Hyderabad; Aerial Delivery Research and Development Establishment (ADRDE) in Agra; and Naval Science and Technology Laboratory (NSTL) Visakhapatnam have developed technologies required for SMART.

### **What happened at the test?**

5. It was conducted from Wheeler Island off the coast of Odisha around noon. DRDO has said all mission objectives including the missile's flight up to the designated range and altitude, separation of its nose cone, release of the torpedo and deployment of Velocity Reduction Mechanism (VRM) were met perfectly. An anti-submarine torpedo of the lightweight category was used.
6. The test follows another crucial test two days ago of the nuclear-capable Shaurya missile. Shaurya is a land-based parallel of the submarine-launched K-15 missile.

### **Why is it significant?**

7. DRDO Chairman Dr G Satheesh Reddy said SMART is a game-changing technology demonstration in anti-submarine warfare. India's anti-submarine warfare capacity building is crucial in light of China's growing influence in the Indian Ocean region.
8. Assets of such warfare consist of deployment of submarines, specialised anti-submarine ships, air assets and state-of-the-art reconnaissance and detection mechanisms. The Navy's anti-submarine warfare capability got a boost in June after the conclusion of a contract for Advanced Torpedo Decoy System Maareech, capable of being fired from all frontline warships. India has been indigenously developing and building several anti-submarine systems and vessels in the recent past.
9. In January, DRDO conducted two successful tests of the K Family's K-4 missiles. The capability of launching nuclear weapons from submarine platforms has great strategic importance in light of the "no first use" policy of India. These submarines can not only survive a first strike by an adversary but also can launch a strike in retaliation. The nuclear-powered Arihant submarine and its class members in the pipeline are assets capable of launching missiles with nuclear warheads.



## TOPIC 18. K MISSILE FAMILY



1. A successful trial of the nuclear capable Shaurya missile was conducted by India, the news agency ANI reported Saturday. Shaurya is a land-based parallel of the submarine launched K-15 missile. These ballistic weapons belong to the K missile family — codenamed after late Dr APJ Abdul Kalam — which are launched from Arihant class of nuclear submarines.
2. A look at what this family of missiles is, their strategic importance as a nuclear deterrent and their recent tests.

### **The K Family of missiles**

3. The K family of missiles are primarily Submarine Launched Ballistic Missiles (SLBMs), which have been indigenously developed by Defence Research and Development Organisation (DRDO) and are named after Dr Kalam, the centre figure in India's missile and space programmes who also served as the 11th President of India.
4. The development of these naval platform launched missiles began in late 1990s as a step towards completing India's nuclear triad — the capability of launching nuclear weapons from land, sea and air based assets.
5. Because these missiles are to be launched from submarines, they are lighter, smaller and stealthier than their land-based counterparts, Agni series of missiles which are medium and intercontinental range nuclear capable ballistic missiles. While K family are primarily submarine-fired missiles to be fired from India's Arihant class nuclear powered platforms, land and air variants of some of its members have also been developed by DRDO.
6. Shaurya, whose user trial was conducted on Saturday, is a land variant of short range SLBM K-15 Sagarika, which has a range of at least 750 kilometers.
7. India has also developed and successfully tested multiple times the K-4 missiles from the family which has a range of 3500 km. It is reported that more members of K-family — reportedly to have been codenamed K-5 and K-6 — with ranges of 5000 and 6000 km are also under development. The early development trials of K-15 and K-4 missiles had begun in the early 2010s.

### **The strategic importance of SLBMs**

8. The capability of being able to launch nuclear weapons submarine platforms has great strategic importance in context of achieving a nuclear triad, especially in light of 'no first use' policy of India. The sea-based underwater nuclear capable assets significantly increase second strike capability of a country and thus boosts its nuclear deterrence. These submarines can not only survive a first strike by adversary but also can launch a strike in retaliation thus achieving Credible Nuclear Deterrence. 2016 commissioned nuclear powered Arihant submarine and its class members which in the pipeline, are the assets capable of launching missiles with nuclear warheads.
9. The development of these capabilities is important considering India's relations with two neighbours China and Pakistan. With China having deployed many of its submarines, including some which are nuclear powered and nuclear capable, this capacity building is crucial for India's nuclear deterrence. In November 2018, after INS Arihant became fully operational, "In an era such as this, a credible nuclear deterrence is the need of the hour. The success of INS Arihant gives a fitting response to those who indulge in nuclear blackmail."

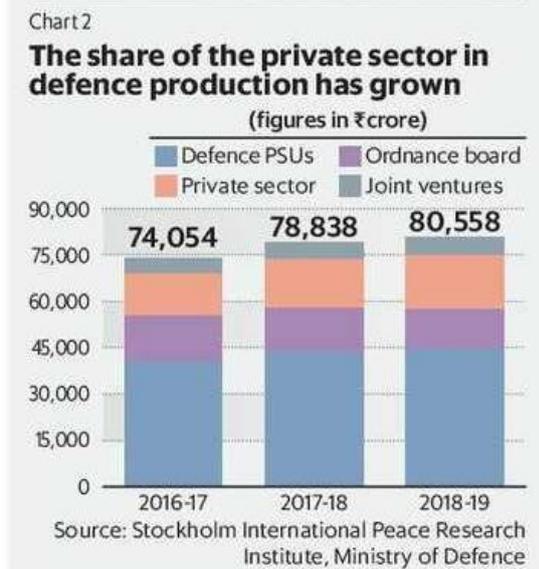
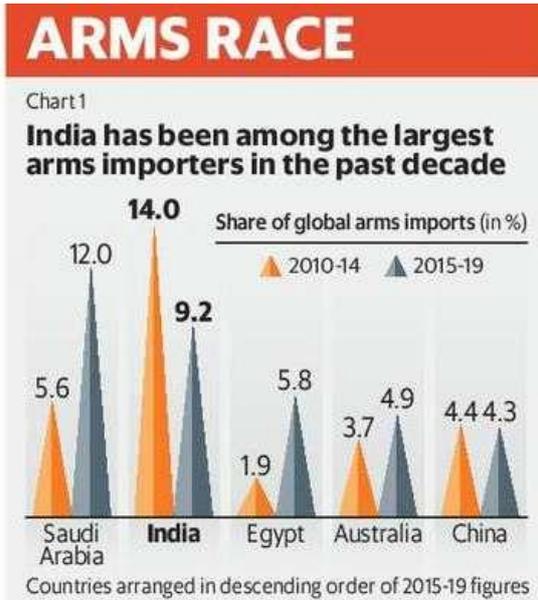
### **The recent tests**

10. In the third week of January this year, DRDO conducted two successful tests of the K-4 missile from submerged platforms off the coast of Andhra Pradesh in a span of six days. These tests were a key step towards ultimately deploying K-4 on INS Arihant, which already has K-15 onboard. In the Saturday's test, Shaurya was examined for several advanced parameters compared to its earlier tests, according to sources.

11. Shaurya, like many of the modern missiles, is a canister-based system, which means that it is stored and operated from specially designed compartments. In the canister, the inside environment is controlled thus along with making its transport and storage easier, the shelf life of weapons also improves significantly.
12. While DRDO has been conducting these tests, there has not been any official communication from the agency about them, possibly because of classified nature of K family missile projects and their close link to the Advanced Technology Vehicle (ATV) project of which Arihant class vessels are part of. These recent tests of these systems can also be looked at as a strong message to China and Pakistan in light of the present situation in the region.

CIVILSIAS

## TOPIC 19. PRIVATE DEFENCE BIZ



- From 1 October, India moves into a new regime for defence systems production and acquisition. Under the larger ambit of the government's Atmanirbhar Bharat tilt, the new policy seeks to ensure self-reliance in defence manufacturing. Along with recommendations to streamline defence procurement, the policy sets several ambitious production targets, including an annual turnover of ₹1.75 trillion and exports of ₹35,000 crore in aerospace and defence goods and services by 2025.
- In 2018-19, India's total defence production was ₹80,558 crore and exports ₹8,320 crore. In other words, the government wants to double domestic production in defence and quadruple exports by 2025. It's using the policy lever to give the Indian private sector a larger business landscape.
- Indian companies, which have seen many a false dawn in the defence sector, are latching on to it, saying the right things, initiating plans and doing the odd deal. A report released this week by the auditor to the government serves as a counterpoint to this promise, and lays bare some of the pulls and pressures involved in taking a business-friendly approach in India's defence sector and converting it into a sustainable business opportunity.

### Imports dominate

- As things stand, India is far from being self-reliant in its defence requirements, while only being a marginal player in exports. According to data from the Stockholm International Peace Research Institute (SIPRI), India's arms imports declined by 32% in the five-year period from 2015-19, as compared to 2010-14. Yet, India remained the second-largest arms importer in the world in the period 2015-2019, 56% of which came from Russia alone. In terms of exports, India ranks 23<sup>rd</sup>, having merely 0.2% of share of global exports (**see Chart 1**).
- For India to reach anywhere close to the proposed 2025 targets will require a radical overhaul of the current defence production regime. While a bulk of defence production is still attributable to the twin government pillars of defence public sector undertakings (DPSUs) and ordnance factories, the emerging private sector will have a significant role to play if India aspires to ramp up its capabilities.
- India has much ground to make up on the defence technology and production curve. As part of the Make in India umbrella, the government has been pushing for a greater role for the private sector. The database of one of these initiatives shows a majority of projects fall in the category of ammunitions (including rockets and bombs), and surveillance and tracking systems. According to the SIPRI database, however, a majority of India's defence imports are in the category of fighter aircraft, helicopters, naval guns and anti-submarine missiles—which present a significantly greater technological and manufacturing challenge.
- Since 2016-17, the earliest for which such data is available, there has been a gradual shift away from the public sector to the private sector. The share of the private sector in total defence production has risen from 19% in 2016-17 to 22% in 2018-19. In the same period, the share of the public sector (DPSU plus ordnance board) has decreased from 75% to 72% (**see Chart 2**).
- Defence production in the public sector is helmed by the Department of Defence Production (DDP), which was set up in 1962 with the objective of developing a comprehensive production infrastructure to produce equipment required for defence. The DDP oversees the functioning of the Ordnance Factory Board (OFB) and

nine defence PSUs, which include Hindustan Aeronautics Limited (HAL), Bharat Electronics Limited (BEL), Bharat Dynamics and Mazagaon Dock.

9. While the purpose of the DPSUs and OFB was to accomplish self-sufficiency in arms production, their performance has come under considerable scrutiny over the past few years. An audit by the Comptroller and Auditor General of India (CAG) in 2016 stated that “defence PSUs failed in their objective of supplying critical weapons and equipment meant for modernisation of Army.”
10. The CAG’s statement was based on following findings. Of capital contracts concluded with DPSUs during XI Army Plan (2007-12), “inordinate delays” were observed in contracts worth ₹30,098 crore, or 63% of total value.
11. According to CAG, the major reasons for inefficiencies were undue time taken in development, delays in successful evaluation of pilot, heavy dependence of DPSU on foreign vendors and ambiguity in contractual terms. In an unscheduled appearance at a ministry of defence (MoD) webinar last month, Prime Minister Narendra Modi chastised the ordnance factories for running like a “government department” and said that steps will be taken to corporatize them.

#### **Policy fillips**

12. For the longest time, defence production was strictly regulated, remaining within the domain of the public sector. In May 2001, the defence sector was opened up to 100% for Indian private sector participation, with foreign direct investment (FDI) up to 26%, but both were subject to licensing. In 2016, FDI under automatic route was allowed up to 49%, and above 49% where it was likely to result in access to modern technology. Earlier this month, the government relaxed the FDI limit under the automatic route to 74%, but it also inserted a ‘national security’ clause, retaining the right to review any deal.
13. The Defence Procurement Procedure (DPP) 2016 undertook several reforms that benefited the private sector. One significant provision in DPP 2016 was the Strategic Partnership Policy (SPP). This allowed selected Indian private sector companies to partner with foreign original equipment manufacturers (OEMs) to jointly manufacture fighter jets, helicopters, submarines and armoured vehicles. Global vendors wanting to tie-up with Indian private sector companies would receive formal assurances from the Indian government to get the necessary licenses. The government would, therefore, play a facilitating role. The controversial Rafale jet deal signed between France’s Dassault Aviation and Anil Ambani-led Reliance Aerospace in 2016 was executed as one such strategic partnership.
14. The 2020 policy has introduced a new category ‘Buy (Global-Manufacture in India)’ to encourage foreign OEMs to setup “manufacturing or maintenance entities through its subsidiary in India”. The new guidelines encourage the manufacturing of the entire equipment rather than just components and spares. Additionally, domestically developed defence platforms must now have at least 60% Indian content.
15. Another policy to benefit domestic manufacturers, particularly private players, is the Defence Offset Policy proposed in DPP 2013. Under this policy, a foreign supplier of defence equipment compensates the ordering country in the form of placing a minimum percent of value addition in the ordering country. India had an offset requirement of 30% for defense contracts over ₹2,000 crore (now revoked from 1 Oct).
16. The Rafale deal, valued at €7.87 billion (about ₹59,000 crore), included a 50% offset obligation—the largest-ever offset contract in India. In this deal, the offset share of the Defence Research and Development Organisation (DRDO), a government entity, was 30%. The remaining 20% was allocated to the Dassault Reliance Aerospace Ltd (DRAL), Dassault’s joint venture with Anil Ambani’s Reliance Group.
17. These contracted offset obligations, which are valued around ₹30,000 crore, are to be discharged over a period of seven years, beginning in the fourth year—that is, from October 2019. The disposal of these offsets is, however, heavily loaded towards the last two years of the seven-year period. On 24 September, CAG tabled a report in parliament where it highlighted that the vendors, Dassault Aviation and weapons-supplier MBDA, had not yet made the transfer of technology to DRDO.
18. Irregularities in the offset policy, CAG added, were not restricted to the Rafale deal alone. Based on a scrutiny of several offset contracts between 2005 and 2018, the CAG report stated that offset contracts built into several defence deals have “not yielded the desired results”.

#### **Private sector still fringe**

19. Several conglomerates entered the defence sector in the early part of this century. In 2004, a committee was set up by the government under the chairmanship of Vijay Kelkar to examine and recommend changes needed in defence acquisition procedures. The report, released in 2005, encouraged the involvement of the country’s best private firms.

20. In 2007, the Tata Group entered the defence manufacturing space with Tata Advanced Systems. Other prominent groups with a presence include the Mahindra group, Hinduja group, Kalyani group, L&T, both Ambani brother groups and, most recently, the Adani group.
21. Mahindra firms and Hinduja group-owned Ashok Leyland are supplying armoured vehicles to the Indian army. Kalyani Strategic Systems and Bharat Forge of the Pune-based Kalyani group are producing a range of defence equipment, including artillery systems, ammunition, missiles and air defence solutions and small arms.
22. But their numbers, at present, are not much to speak of. In 2018-19, the size of the entire private sector in the defence space was ₹17,350 crore—about one-third the quarterly turnover of Reliance Industries Ltd. Data in the public domain shows that Tata Advanced Systems had ₹341 crore revenues in 2017-18 and Kalyani Strategic Systems ₹119 crore revenues in 2019-20.
23. But the private sector is once again looking to make big moves. Take the example of the Adani Group. Earlier this month, an Adani subsidiary bought 51% in Gwalior-based PLR Systems, which makes small arms and in which 49% is owned by Israeli defence manufacturer IWI. The latest relaxation in FDI norms does open the door wider for more strategic alliances between foreign defence firms and Indian private companies.
24. The MoD seems increasingly keen to engage with private players. On 1 September, for instance, it inked a long-awaited ₹2,580 crore deal with L&T and Tata Aerospace and Defence to manufacture indigenous Pinaka multi-barrel rocket launchers for the Army. Defence PSU BEL was also a beneficiary of the deal and will be contracted to build trucks for the rocket launchers.
25. While the larger trend seems to be towards privatization and foreign investment, the public sector still remains the backbone of defence production in India, and therefore, needs proactive reforms. Earlier this month, Chief of Defence Staff General Bipin Rawat called for a revamping of India's defence PSUs with a focus on improving their work culture and quality control.
26. He also called for rationalization of India's defence expenditure, noting that in spite of being the world's third-largest defence spender, India does not have the defence capabilities it desires. India's armed forces, he added, were committed to winning wars with indigenous solutions and urged the private industry to invest in building long-term capabilities. If India is to indeed realise its ambition of being a significant player in the global defence scene, it would require a massive modernisation of its public defence set-up, along with an infusion of capital and technological expertise from private companies.

## TOPIC 20. MULTI-MODE HAND GRENADES

1. The Ministry of Defence on Thursday announced it had signed a contract with a Nagpur-based private entity for supply of 10 lakh of units indigenously designed and developed Multi-Mode Hand Grenades (MMHG) to the Indian Army at a cost of over Rs 400 crore. These grenades will be replacing the World War-II vintage 'Mills Bomb' type 36M hand grenades now used by the Army.
2. A look at the features of the MMGH, and why they are considered an improvement over those currently in use.

### The No 36 grenades currently in use

3. In the early 20th century, militaries across the world started using fragmentation grenades, whose casings are structured for it to break into small fragments which can cause further harm following the explosion. The peculiar pineapple-like look was given because the outside segments and grooves aid the fragmentation of the casing. In the further improved designs, the grooves and segments were put from the inside and pineapple like outer structure was also retained for better grip.
4. For several years now, the Indian Army has been using the World War vintage 36M hand grenade. The number refers to a variant of the 'Mills Bomb' which are British origin grenades and these grenades also have the pineapple shape. These grenades can be fired from the rifle too. The 36M have been manufactured by the facilities of the Ordnance Factory Board (OFB) for the Armed forces.

### The Multi-Mode Hand Grenade

5. "Grenades of natural fragmentation type have been in use by the infantry world over for a long time. Indian Army still uses the 36M, a grenade which also has severe reliability problems and uneven fragmenting pattern making it unsafe even to the thrower. The multi-mode grenade has been developed to overcome these defects. It uses preformed cylindrical mild steel pre-fragments to achieve uniform distribution," says the official page of the DRDO's facility Terminal Ballistic Research Laboratory (TBRL) which has developed the MMHG.
6. The MMHG can be used in two different structures resulting in two different modes — defensive and offensive. The grenades being used by the forces in India till now have been mainly the defensive mode grenades, which means that they are to be hurled when the thrower is in a shelter or has a cover and the target is in an open area and can be harmed by fragmentation.
7. On the other hand, the offensive grenades do not fragment, and the adversary is harmed by the blast or is stunned while the thrower is safe.
8. For the MMHG's defensive mode, the grenade has a fragmenting sleeve and a lethal radius of 10 metres. In the offensive mode, the grenade is without a sleeve and mainly used for blast and stun effect. In the offensive, it has a lethal radius of 5 meters from point of burst.

### The supply of MMHG

9. The Acquisition Wing of the MoD on Thursday signed a contract with Economic Explosive Ltd — EEL is a subsidiary of Nagpur-headquartered Solar Group — for the supply of 10 lakh MMHG to the Indian Army at an approximate cost of Rs 409 crore. For conducting field tests of the grenade, the DRDO had transferred the technology to the company four years ago. The grenade has been tested in various types of conditions and is said to have achieved 99 per cent safety and reliability.
10. The MoD press statement in this regard said, "This is a flagship project showcasing public-private partnership under the aegis of Government of India (DRDO and MoD) enabling 'AtmaNirbharta' in cutting edge ammunition technologies and accomplishes 100 per cent indigenous content."
11. Officials said the development of the grenade had begun around 15 years ago and along with the DRDO facility, establishments of Army and OFB have also played a role in the development.
12. According to the company website, the product has a shelf life of 15 years from the date of manufacturing if stored under normal circumstances. The website also states that the product has twin delay tubes for additional safety and 3800 uniform fragments for higher lethality.

## TOPIC 21. WHATSAPP

### The story so far:

1. In recent weeks, television news channels have shared leaked WhatsApp chats of film actors in their coverage of actor Sushant Singh Rajput's dying. This has led to questions about whether communication over platforms such as WhatsApp is secure or not. It prompted Facebook-owned WhatsApp to come out with a statement on its use of end-to-end encryption to secure user messages.

### Does WhatsApp have access to chats?

2. No. Since 2016, WhatsApp has installed an end-to-end encryption system, which, as its FAQ section says, "ensures only you and person you're communicating with can read what's sent, and nobody in between, not even WhatsApp".
3. Governments across the world see end-to-end encryption as a huge issue when it comes to law enforcement. While WhatsApp says it responds to requests from law enforcement agencies "based on applicable law and policy," it is not clear what kind of data it would have to share. News reports have mentioned that these could be metadata such as mobile number, IP address, location, and so on.

### How is WhatsApp designed to ensure such secure communication?

4. WhatsApp uses encryption protocol developed by Open Whisper Systems, a project known best for its Signal app, which also uses the same open-source framework to ensure privacy. Whistle-blower Edward Snowden's quote — "I use Signal every day" — is prominently displayed on application's homepage. Many closed messaging applications now use the Signal protocol.

### What is the technology behind this?

5. The technology that forms the basis for this is called the 'Diffie-Hellman key exchange'. In a 1976 paper titled, 'New Directions in Cryptography,' Whitfield Diffie and Martin E. Hellman saw the futility of the old ways of sharing a key securely (say, by "sending the key in advance over some secure channel such as private courier or registered mail") in the emerging digital world. They proposed a way for secure communication via a method of a shared secret key, and that too when the communication is over a not-so-secure channel.
6. This is all about high math, but one way to understand the broad concept, used by many experts, is by way of colours. In world of imagination, a shared secret colour is the shared secret key between two communicators, who we will call A and B. (There are many versions of this example on Internet.) A and B need to communicate without anyone eavesdropping. They first agree on a public colour (say, yellow). The two communicators then choose their own private colour, which is not to be shared with anyone. Say A chooses red and B, blue. They then individually mix their private colour with the public colour and send the mixture to each other. Note that the eavesdroppers can figure out the public colour and the mixtures. But there is one more step. B's mixture (some sort of green) at A's end is added with A's private colour (red), and A's mixture (some sort of orange) at B's end is added with B's private colour (blue). They both arrive at the same secret colour after the final step. There is now a shared secret colour key.
7. The message that also needs to be understood is that while it is easy to add colours, it is difficult to figure out the original colours that contributed to a mixture. In the math world, that is called a one-way function. Imagine the difficulty in figuring out a key from complex mathematical computations. "A third party eavesdropping on this exchange must find it computationally infeasible to compute key from information overheard."

### Can't those who have access to the server read messages?

8. End-to-end encryption removes this vulnerability. WhatsApp also says it does not store messages on its servers once they are delivered.
9. An earlier generation of encryption did not secure the entire channel, but secured the communication between a user and the server (of a messaging service). Once the server received a message intended for another user, it would decrypt and again encrypt it before sending it securely to the receiver. But this meant that there was a chance of security being compromised at the level of the server.

### Can leaks still happen?

10. End-to-end encryption cannot prevent leaks from happening if a third party has access to a device which contains these messages. Encryption also does not help in cases wherein the sender or the receiver of a message shares it with others, a member of a group shares it with others, or messages are stored in a different format on a different application or platform open to others.

### Are there other vulnerabilities?

11. Bugs that lead others to control a user's phone are an example of such vulnerabilities. For instance, last year, WhatsApp revealed that surveillance technology developed by Israel's NSO Group had been used to spy on about 1,400 people across the world, including civil rights activists and journalists in India.

CIVILSIAS

## TOPIC 22. HERD IMMUNITY

### The story so far:

1. Right from the time it became obvious that the SARS-CoV-2 virus outbreak was not confined to China, but scaling other shores too, the theory of herd immunity has been floating around. Initially, herd immunity, an important tool in epidemic control, was proposed as a means to overcome the pandemic. Only a certain proportion of the population needs to be infected in order to stop large outbreaks, either through naturally-acquired disease, or through vaccination. Since a vaccine is not available for COVID-19 yet, some people advocated that the infection be allowed to spread in the community until herd immunity is achieved.

### Why is this being stoutly opposed?

2. The SARS-CoV-2 virus is easily transmissible and would require around 60-70% of the population to be infected to acquire herd immunity.
3. In the World Health Organization's (WHO) 'Science in 5' video series, the organisation's chief scientist, Soumya Swaminathan, explains herd immunity with the help of a common childhood infectious disease — measles — for which there is a very effective vaccine. "To achieve herd immunity in the population, for measles, you need about 95% of the people to have immunity or antibodies," she explains. "Even if you have 5% of children [who are] not vaccinated, these others actually have enough protection in the population to prevent the measles virus from actually going from one person to the next. So, it is really like having a barrier of people who are protected, who break that chain of transmission."
4. For the SARS-CoV-2, Dr. Swaminathan thinks that at least 60-70% of the population should have immunity to really break the chain of transmission. "If you allow this to happen naturally, it will take a long time, of course, but more importantly, it is going to do a lot of collateral damage," adds Dr. Swaminathan. "So, even if 1 % of people who get infected are ultimately going to die, then this can add up to a huge number of people, if we look at the global population. And that is why we believe [that] it is not a good idea to achieve herd immunity by just letting the infection run wild in the general population and infect a lot of people. We should talk about herd immunity in the context of a vaccine," she says.
5. Marc Lipsitch, Professor of Epidemiology and director, Center for Communicable Disease Dynamics, Harvard School of Public Health, responding on Twitter to the news of the White House's new pandemic adviser recommending 'herd immunity', said: "This is simply wrong ... Herd immunity is not a strategy or a solution. It is surrender to a preventable virus."

### How and when will herd immunity be achieved in this pandemic?

6. Arnaud Fontanet and Simon Cauchemez, authors of a recent Nature publication, ponder over this exact point: "Herd immunity is achieved when one infected person in a population generates less than one secondary case on an average, which corresponds to the effective reproduction number  $R$  (that is, the average number of persons infected by a case) dropping below 1 in the absence of interventions." The publication says, "With flu pandemics, herd immunity is usually attained after two to three epidemic waves, each interrupted by the typical seasonality of influenza virus, and more rarely, by interventions, with the help of cross-protection through immunity to previously encountered influenza viruses, and vaccines, when available." Currently, there is insufficient confirmed information on re-infection to determine how that will influence the pandemic's course.

### What does the sero-prevalence study in India say?

7. A measure of the infection levels in the population is provided through the sero-surveys conducted by the Indian Council of Medical Research (ICMR). The second study was done between August 17 and September 22, 2020, and found the prevalence at 15.6% of the population in urban slums and at 8.2% in non-slum areas. The hotspots were not included this time. In Delhi, the second round estimated a sero-prevalence of 29.1%. The study revealed that for every reported COVID-19 case, there were 26-32 infections, down from 81-130 infections per reported case in May. It also said the susceptibility of a considerable section of people, who are still unexposed to SARS-CoV-2, exists, and the risk in urban slums is twice that in non-slum areas, and four times higher than the risk in rural settings. In Mumbai (study not by ICMR), the second-round estimated around 45% prevalence in slums and 18% sero-prevalence in non-slums.

### Are vaccines the solution?

8. The Nature paper argues that vaccines are particularly suited for creating herd immunity because "their allocation can be specifically targeted to highly exposed populations, such as healthcare workers or individuals with frequent contact with customers." They may have a significantly greater impact on reducing viral circulation than naturally-acquired immunity, especially if it turns out that naturally-acquired protective immunity requires boosts through re-infections.

9. Dr. Swaminathan says, “With a vaccine you can achieve immunity and herd immunity safely. Through natural infection also we can achieve it at some point, but it would be at great human cost.” Meanwhile, until a vaccine is readied, it would be best to take actions that would slow down the progress of the virus — following COVID-19 etiquettes of wearing a mask, physical distancing and following hand hygiene — she adds.

CIVILSIAS

## TOPIC 23. 'IDEAL' WEIGHT AND DIET

### The story so far:

1. The National Institute of Nutrition (NIN), the Hyderabad-based premier research body of the Indian Council of Medical Research (ICMR), has released a new set of guidelines, updating norms on recommended dietary allowances (RDA), which is the average daily intake needed for a nutritious diet. Besides several other recommendations, a salient point in the report released this week is the upward revision of the 'ideal' weight of Indian men and women.

### How are these reports prepared?

2. In 1989, an expert committee constituted by the NIN to decide on what should be a nutritious diet, used data generated by studying body weights and heights of well-to-do Indian children and adolescents. This was not reflective of the breadth and diversity of India. The reference weights for a man and woman were fixed at 60 kg and 50 kg respectively. Another committee in 2010 considered extensive data on anthropometry collected by the National Nutrition Monitoring Bureau, using nutrition profiles from ten States of India for computing reference body weights. They computed reference weights for different age groups. Most of the data collected were from rural India, but the reference points for a single 'ideal' weight remained unchanged. For the latest report, NIN looked at nationally representative data from the National Family Health Survey-4 (NFHS-4, 2015-16), the National Nutrition Monitoring Bureau (2015-16), the World Health Organization (2006-07) and the Indian Academy of Paediatrics (IAP, 2016) to "derive acceptable reference body weight values through the lifespan." The definition for a reference Indian adult man and woman were modified with regard to age (19-39 years) instead of (20-39 years) and a body weight of 65 kg and 55 kg respectively were fixed for a normal Body Mass Index (BMI). Though termed 'ideal', it is more appropriately a measure of the average weight of Indians.

### How do Indians compare internationally?

3. The reference weights are a proxy for the nutritional status of the people of a country. International comparisons find that the average Indian is lighter than his or her counterparts globally. The average Dutch male is 87.4 kg and a woman 72.3 kg, and the average weight in the United Kingdom is 86.8 kg for men and 72.9 kg for women, according to data aggregator 'WorldData.info'. Indians are closer to typical weights prevalent in Asia. The average Sri Lankan male is 61.3 kg and woman 56.2 kg, and the average Japanese man is 69 kg and woman 54.7 kg. The data, however, is based on 2010 estimates, and the latest NIN revision will push India up a few notches.

### What are the dietary recommendations?

4. The guidelines specify the amount of carbohydrates, minerals, dietary fibre, fats and oils, protein, and even water, that a person must ideally consume. The water intake for an adult man ranges from 32-58 ml per kg body mass, and for a woman, it ranges from 27-52 ml per kg body mass. For children, the requirement is over 60 ml per kg body mass, and for adolescent boys it ranges from 47-60 ml per kg body mass, while for girls, it is 39-49 ml per kg body mass. For a pregnant woman, based on the working intensity, the water required from beverages ranges from 2.1 litres to 3.2 litres per day. A minimum 400 gram/day of fruits and vegetables are necessary to obtain sufficient antioxidant nutrients, such as beta-carotene, Vitamin C, and certain non-nutrients like polyphenols and flavonoids that reportedly protect against chronic diseases. This should be complemented with a sufficient amount of vegetable oil to obtain Vitamin E. The fat intakes for sedentary, moderate and heavy activities have been set at 25 gram/day, 30 g/d and 40 g/d respectively for an adult man, and 20 g/d, 25 g/d and 30 g/d for adult women.

## TOPIC 24. SUN'S MAGNETIC FIELD

1. The magnetic field of the Sun is unique in that, unlike many other celestial bodies, it reverses its polarity roughly every 11 years. Regular observations of the Sun's magnetic field begin in 1967, and, so far, we have data for the period from 1967 almost to the present, spanning the solar cycles 20-24. Now, an Indo-Russian collaboration has added to this with a plot of the solar magnetic field from 1915 to 1965 (solar cycles 15-19). Using a novel approach, they have calibrated and calculated the field using data from the archives of the Kodaikanal Solar Observatory of the Indian Institute of Astrophysics.
2. "For about the last 50 years, that is, from around 1970s, regular measurements of magnetic field are available from different observatories. One important one is Wilcox Solar Observatory from the US. Before that Mount Wilson Solar Observatory provided some data, although they are not of high quality and uniform," says Dipankar Banerjee, Director of Aryabhata Research Institute of Observational Sciences, Nainital, and an author of the paper which has been accepted for publication in The Astrophysical Journal Letters.

### Data from Kodaikanal

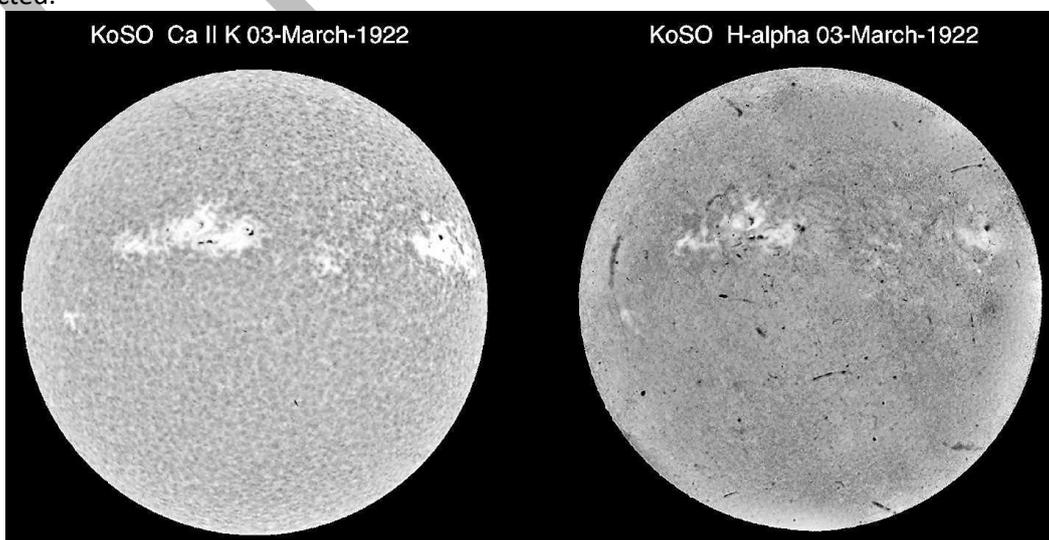
3. The present study makes the important contribution of building on this using the Kodaikanal Solar observatory data, and extending the magnetic field calculations for another fifty years approximately. "Understanding the magnetic field evolution in the past improves our understanding of the physics itself. In the work we have also talked about the timing of the polarity reversal, which is also very important," adds Prof. Banerjee. Solar variations, both of long scale and short, depend on the magnetic field, and these can affect both the climate and space weather. Therefore, understanding the magnetic field variations can contribute to our understanding of climate and space weather.
4. The Kodaikanal Solar Observatory was established in 1899 and observations of the Sun from this observatory run over a hundred years, providing what is among the longest series of solar data. An important feature of these data is the multi-wavelength observations. The data consist of full disc spectral images of the Sun using the Ca II K and H-alpha lines. Both these lines image the atmospheric layer of the Sun known as the chromosphere.

### Extracting information

5. From the full-disc images of Ca II K features, bright patches above magnetic field regions, known as plages are identified. "Underneath these one can find sunspots, so plages provide information about magnetic field locations and strength," says Bidya Binay Karak, a Ramanujan Fellow at the Department of Physics, Indian Institute of Technology (BHU), Varanasi, and an author of the paper.
6. On the other hand, the H-alpha images show filaments, which are formed along magnetic neutral lines. "Their presence also represents the magnetic field distribution beneath. They also allow us to study the evolution of magnetic field with time," he explains.

### Reconstruction

7. The team first calibrated the Ca II K images of the Kodaikanal data using magnetic field measurements that were available during that period. Using this, they interpreted the data for the periods when magnetic field measurements were not available, namely, years 1915-1965. "The H-alpha images display the location of filaments, which are believed to be formed along the magnetic neutral lines, so these images provide information on the magnetic polarity," says Dr Karak. "Combining the two sets, the full magnetic field data was reconstructed."



## TOPIC 25. ANTI - RADIATION MISSILE



1. India's first indigenous anti-radiation missile, Rudram, developed for the Indian Air Force, was **successfully flight-tested from a Sukhoi-30 MKI jet** off the east coast on Friday.

### **What is an anti-radiation missile?**

2. Anti-radiation missiles are designed to detect, track and neutralise the adversary's radar, communication assets and other radio frequency sources, which are generally part of their air defence systems. Such a missile's navigation mechanism comprises an inertial navigation system — a computerised mechanism that uses changes in the object's own position — coupled with GPS, which is satellite-based.
3. For guidance, it has a "passive homing head" — a system that can detect, classify and engage targets (radio frequency sources in this case) over a wide band of frequencies as programmed. Officials said once the Rudram missile locks on the target, it is capable of striking accurately even if the radiation source switches off in between. Officials said the missile has an operational range of more than 100 km, based on the launch parameters from the fighter jet.

### **How was Rudram developed?**

4. Rudram is an air-to-surface missile, designed and developed by the Defence Research and Development Organisation (DRDO). Officials said DRDO initiated development of anti-radiation missiles of this type around eight years ago, and its integration with fighter jets has been a collaborative effort of various DRDO facilities and formations of the IAF and Hindustan Aeronautics Ltd. While the system has been tested from a Sukhoi-30 MKI, it can be adapted for launch from other fighter jets too.
5. Because the missiles are to be carried and launched from extremely complex and sensitive fighter jets, the development was full of challenges, such as development of radiation seeker technologies and guidance systems, besides integration with the fighter jet, said a DRDO scientist.
6. An official said Sanskrit name Rudram was given in keeping with tradition, because it includes letters ARM (acronym for anti-radiation missile) and word in Sanskrit describes a "remover of sorrows" (one of its meanings).

### **How significant are such missiles in aerial warfare?**

7. Rudram has been developed for the IAF's requirement to enhance its Suppression of Enemy Air Defence (SEAD) capability. As one of the many aspects of SEAD tactics, anti-radiation missiles are used mainly in the initial part of air conflict to strike at the air defence assets of the enemy, and also in later parts, leading to higher survivability to a country's own aircraft. Neutralising or disrupting the operations of the adversary's early warning radars, command and control systems, surveillance systems that use radio frequencies and give inputs for anti-aircraft weaponry, can be very crucial.
8. Scientists said modern-day warfare is more and more network-centric, which means it comprises elaborate detection, surveillance and communication systems that are integrated with the weapons systems.

### **What next for Rudram?**

9. Rudram hit the radiation target with pinpoint accuracy, DRDO said. After the test, Defence Minister Rajnath Singh tweeted to say the test is "a remarkable achievement".
10. Officials said some more flights would take place before the system is ready for induction.

## TOPIC 26. NOBEL PRIZE IN CHEMISTRY



1. Its simplicity has often been compared to the 'Cut-Copy-Paste' mechanism in any word processor (or probably, the equally common 'Find-Replace' mechanism), while its uses can potentially transform human beings, and all other life forms. It can potentially eliminate genetic, and other, diseases, multiply agricultural production, correct deformities, and even open up the more contentious possibilities of producing 'designer babies', and bringing cosmetic perfection. In effect, anything that is linked with functioning of the genes can be corrected, or 'edited'.
2. The CRISPR (short for the rather inelegantly named Clustered Regularly Interspaced Short Palindromic Repeats) technology for gene-editing has been triggering tremendous excitement ever since it was developed in the year 2012, both for the promise that it holds in improving the quality of life, and the dangers of its misuse. Hundreds of scientists and laboratories have since started working on the technology for a variety of uses. In the last eight years, the technology has brought a string of awards and honours for its developers. On Wednesday, it culminated in the Nobel Prize for Chemistry for the two women who started it all, 52-year-old Emmanuelle Charpentier of France, and 56-year-old American Jennifer Doudna.
3. It is possibly the only time in the history of Nobel Prize that two women have been declared the sole winners.

### The Technology

4. Editing or modifying, gene sequences is nothing new. It has been happening for several decades now, particularly in field of agriculture, where several crops have been genetically modified to provide traits.
5. "But what CRISPR has done is make gene editing very easy and simple, and at the same time extremely efficient. And the possibilities are nearly endless," said Debojyoti Chakraborty who works with this technology at the New Delhi-based CSIR-Institute of Genomics and Integrative Biology.
6. In essence, the technology works in a simple way — it locates the specific area in the genetic sequence which has been diagnosed to be the cause of the problem, cuts it out, and replaces it with a new and correct sequence that no longer causes the problem.
7. The technology replicates a natural defence mechanism in some bacteria that uses a similar method to protect itself from virus attacks.
8. An RNA molecule is programmed to locate the particular problematic sequence on the DNA strand, and a special protein called Cas9, which now is often described in popular literature as 'genetic scissor', is used to break and remove the problematic sequence. A DNA strand, when broken, has a natural tendency to repair itself. But the auto-repair mechanism can lead to the re-growth of a problematic sequence. Scientists intervene during this auto-repair process by supplying the desired sequence of genetic codes, which replaces the original sequence. It is like cutting a portion of a long zipper somewhere in between, and replacing that portion with a fresh segment.
9. Because the entire process is programmable, it has a remarkable efficiency, and has already brought almost miraculous results. There are a whole lot of diseases and disorders, including some forms of cancer, that are caused by an undesired genetic mutation. These can all be fixed with this technology. There are vast applications elsewhere as well. Genetic sequences of disease-causing organisms can be altered to make them ineffective. Genes of plants can be edited to make them withstand pests, or improve their tolerance to drought or temperature.
10. "In terms of its implications, this is possibly the most significant discovery in life sciences after the discovery of the double-helix structure of the DNA molecule in the 1950s," said Siddharth Tiwari of the Mohali-based National Agri-Food Biotechnology Institute who has been using the CRISPR technology on genes of banana plant.

### The Winners

11. Charpentier and Doudna were working independently when they stumbled upon different pieces of information that later came together to be developed into this technology. Charpentier, a biologist then working at a

laboratory in Sweden, needed the expertise of a biochemist to process the new information she had got on the genetic sequences in a particular bacteria she had been working on called *Streptococcus pyogenes*.

12. She had heard of Doudna's work at the University of California, Berkeley, and the two happened to meet at a scientific conference in Puerto Rico in 2011, according to an account published on the website of the Nobel Prize. Charpentier proposed a collaboration, to which Doudna agreed. Their research groups then collaborated over long distance over the next year. Within a year they had been able to come out with a revolutionary technology of gene-editing.
13. Several other scientists and research groups also made vital contributions in the development of this technology. Someone like Virginijus Siksnys, a biochemist working at the Vilnius University in Lithuania, is widely recognised as a co-inventor of this technology. In fact, Siksnys shared the 2018 Kavli Prize in Nanoscience with Doudna and Charpentier for this technology. But the seminal contribution of the two women is undisputed. Their achievement has been recognised through several prestigious awards in the last few years, including the Breakthrough Prize in Life Sciences in 2015 and the Wolf Prize in Medicine earlier this year.
14. There has been some murmurs in the scientific community about the Chemistry Nobel having gone to biologists. But apparently this is not a new phenomenon. The central role of chemistry in life sciences — at the molecular level, biology is essentially chemistry — has ensured that increasing number of Nobel prizes have recently been awarded for work in the field of biochemistry. In fact, a research paper published earlier this year has pointed out this gradual shift in the nature of Chemistry prize. According to *Chemistry World*, a news magazine published by the Royal Society of Chemistry, of the 189 scientists awarded with the Chemistry Nobel so far, 59 had worked in the field of biochemistry. This was more than any other branch of chemistry.

#### **Ethical Concerns**

15. In November 2018, a Chinese researcher in Shenzhen created international sensation with his claim that he had altered the genes of a human embryo that eventually resulted in the birth of twin baby girls. This was the first documented case of a 'designer babies' being produced using the new gene-editing tools like CRISPR, and raised exactly the kind of ethical concerns that scientists like Doudna have been speaking about.
16. In the case of the Chinese twins, the genes were edited to ensure that they do not get infected with HIV, the virus that causes AIDS. This special trait would then be inherited by their subsequent generations as well. The concerns were not over the reason for which the technology was used as much as the ethics of producing babies with particular genetic traits. Scientists pointed out that the problem in this case, potential infection to HIV virus, already had other alternative solutions and treatments. What made matters worse was that the gene-editing was probably done without any regulatory permission or oversight. Others also pointed out that while CRISPR technology was incredibly precise, it wasn't 100 per cent accurate, and it is possible that some other genes could also get altered by mistake.
17. Doudna herself has been campaigning for the development of international rules and guidelines for the use of CRISPR technology, and has advocated a general pause these kind of applications till such time.
18. Emmanuelle Charpentier of France and Jennifer Doudna of the U.S. on Wednesday won the Nobel Chemistry Prize for the gene-editing technique known as the CRISPR-Cas9 DNA snipping "scissors", the first time a Nobel science prize has gone to a women-only team.
19. Using the tool, "researchers can change the DNA of animals, plants and microorganisms with extremely high precision," the Nobel jury said. "This technology has had a revolutionary impact on the life sciences, is contributing to new cancer therapies and may make the dream of curing inherited diseases come true."
20. The technique has been tipped for a Nobel nod several times in the past, but speaking to reporters, Ms. Charpentier said the call was still a surprise. "Strangely enough I was told a number of times (it might happen) but when it happens you are very surprised and you feel that it's not real," she said.
21. Ms. Charpentier, 51, and Ms. Doudna, 56, are just the sixth and seventh women to receive the Nobel Prize in Chemistry.
22. While researching a common harmful bacteria, Ms. Charpentier discovered a previously unknown molecule — part of the bacteria's ancient immune system that disarms viruses by snipping off parts of their DNA.
23. After publishing her research in 2011, Ms. Charpentier worked with Ms. Doudna to recreate the bacteria's genetic scissors, simplifying the tool so it was easier to use and apply to other genetic material. They then reprogrammed the scissors to cut any DNA molecule at a predetermined site — paving the way for scientists to rewrite the code of life where the DNA is snipped.
24. The CRISPR-Cas9 tool has already contributed to significant gains in crop resilience, altering their genetic code to better withstand drought and pests.

### Huge potential

25. The technology has also led to innovative cancer treatments, and many experts hope it could one day make inherited diseases curable through gene manipulation.
26. "There is enormous power in this genetic tool, which affects us all. It has not only revolutionised basic science, but also resulted in innovative crops and will lead to ground-breaking new medical treatments," Claes Gustafsson, chair of the Nobel Committee for Chemistry, said in a statement.
27. CRISPR's relative simplicity and widespread applicability has, however, triggered the imaginations of rogue practitioners.
28. In 2018 in China, scientist He Jiankui caused an international scandal when he used CRISPR to create what he called the first gene-edited humans.

CIVILSIAS

## TOPIC 27. NOBEL PRIZE IN PHYSICS



**Making a mark:** (From left) Reinhard Genzel, Andrea Ghez and Roger Penrose were awarded the Nobel Prize for Physics on Tuesday. • AP & AFP

1. On Tuesday, the Royal Swedish Academy of Sciences decided to award one half of the 2020 Nobel Prize in physics to Roger Penrose and the other half jointly to Reinhard Genzel and Andrea Ghez for furthering the understanding of black holes, the most “enigmatic” objects in the universe.
2. Earlier on Monday, three biologists shared **Nobel Prize in medicine** for discovery of vaccine for hepatitis C virus.

### **What are black holes?**

3. A black hole is formed when stars collapse and can be defined as a space in the universe with an escape velocity so strong that even light cannot escape it.
4. Escape velocity is speed at which an object must travel to override a planet or an object’s gravitational force. For instance, for a spacecraft to leave surface of Earth, it needs to be travelling at a speed of about 40,000 km per hour.
5. Since light cannot get out, black holes are invisible and can only be tracked with the help of a space telescope or other special tools. And the reason light cannot escape is mainly that the gravity inside a black hole is very strong as a result of a lot of matter being squeezed into a small space.
6. What do the award winners’ work tell us about black holes?
7. Penrose has been awarded the prize for the discovery “that black hole formation is a robust prediction of the general theory of relativity,” while Genzel and Ghez have been awarded the prize for the discovery of a “supermassive compact object at the centre of our galaxy.”
8. Penrose’s work has shown that black holes are a direct consequence of Albert Einstein’s general theory of relativity. Einstein himself did not believe that black holes exist and presented his theory in November 1915, providing a new way to look at and understand gravity that shapes the universe “at the largest scale”. Gravity also shapes space and influences the passage of time. It is this gravity, which is so great inside a black hole that is able to bend space and slow down time.
9. Penrose used Einstein’s general theory of relativity to prove that process of formation of black holes is a stable one. He proved that black holes exist and described them in detail back in 1965, 10 years after Einstein died.
10. Genzel and Ghez, on the other hand, have discovered that an invisible and an extremely heavy object governs the stars’ orbit at the centre of the Milky Way. This extremely heavy object has the mass equivalent to 4 million solar masses and is packed into an area about the size of our solar system.
11. Essentially, their work tells us that at the centre of our galaxy the Milky Way lies an invisible supermassive object, of which a black hole provides a reasonable explanation. Physicists have been suspecting the existence of a black hole at the centre of our galaxy for over 50 years now.
12. In order to see through to the middle of the Milky Way, Genzel and Ghez worked on developing methods and used some of the world’s largest telescopes.
13. By observing the orbits of the stars’ that are closest to the centre of the Milky Way, the physicists think that the black hole could most likely be hiding in Sagittarius A\*, a source of radio waves around which all stars in the Milky Way orbit. In other words, the existence of a black hole at the centre of our galaxy is what the physicists believe is what pulls a “jumble of stars,” causing them to “rush around at dizzying speeds”.

### **Where does research on black holes go from here?**

14. While work done by Penrose has established that black holes are a “robust” consequence of the theory of relativity and that they are formed naturally in very overdense regions, thereby proving that their formation is a stable process, the theory ceases to apply at the centre of the black hole called the singularity– “a boundary at which all the known laws of nature break down”. This essentially means that the extent to which the theory of

general relativity applies to the structure of black holes requires further probing and questions about the internal structure of black holes still remain.

15. In 1997, famous Indian astrophysicist Jayant Narlikar organised a public talk for a visiting British mathematical physicist in an auditorium in central Pune. Contrary to expectations, over 5,000 people turned up to listen. With the auditorium packed beyond capacity, doors had to be shut. But people broke the doors to get inside, resulting in commotion. Police had to intervene, and threatened to arrest Narlikar for causing public unrest.
16. The speaker that day was none other than Roger Penrose, the hugely popular, now 89-year-old, theoretical physicist, mathematician, science philosopher and bestselling author who, on Tuesday, was rewarded with the Nobel Prize in Physics for his work on black holes. Penrose won half the Prize.
17. In second consecutive year when **Physics Prize** has gone to astrophysics, other half is shared by Andrea Ghez, 55, of US and German astronomer Reinhold Genzel, 68, who have been working independently at two different observatories. Their work over the years, based on independent observations by two different telescopes, has provided compelling evidence of the presence of a supermassive black hole at centre of our Milky Way galaxy.
18. Ghez and Genzel, whose main work came in the 1990s and early 2000s, have been considered Nobel contenders for many years now.

### Long overdue

19. For Penrose, honour has been long overdue. His work which has been mentioned in citation — a confirmation that black holes indeed do form, and their detailed description — was completed in way back in 1965.
20. “The award to Penrose is a bit of a surprise because it has come so late. In fact, I had thought he would never be given the award, just like (Stephen) Hawking, his collaborator on the work on black holes, never was. Most of his work on black holes came in collaboration with Hawking. The two have had a long association over several decades. It’s difficult to separate one’s work from the other,”
21. “But Penrose has so many other contributions as well, in mathematics, in physics, in philosophy. Black holes form a very small part of his work. It’s really surprising why he did not get the Nobel all these years. But Hawking was ignored as well, and now the recognition for Penrose has come just two years after Hawking’s death. Ideally, the two should have been recognised together,”

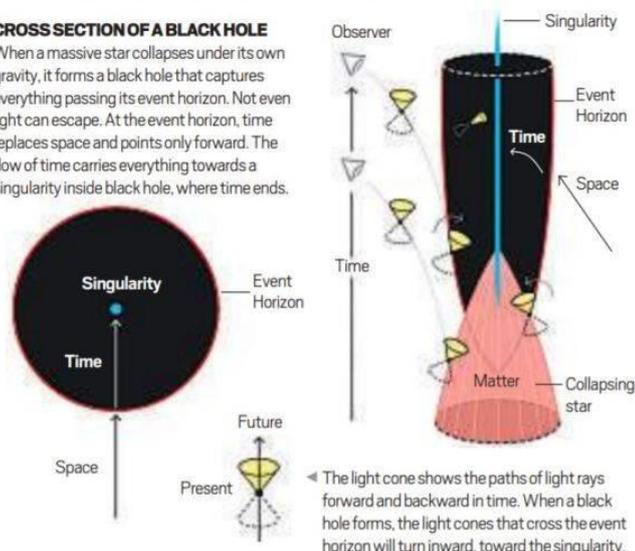
### Ghez & Genzel

22. “Thankfully, Ghez and Genzel have been recognised on time. People like me have been quite convinced that they would certainly be honoured. There is another case where you cannot recognise one without other, even though they have been working separately. They have been running two different experiments, using two different telescopes, in two different countries, and have essentially come around to same conclusion,” he said.
23. Ghez, who spends a lot of time popularising science and talking about black holes, works at Keck Observatory on Hawaii’s Mauna Kea, and Genzel at the Very Large Telescope facility on Paranal mountain in Chile.
24. They made precise measurements of orbits of brightest stars in area considered the middle of Milky Way, and their studies showed that slightly unusual trajectories and speed of stars could only be explained by presence of a very massive but invisible, heavenly body. This is now known to be Sagittarius A\* supermassive black hole, which has a mass four million times that of Sun and is confined to an area roughly size of our Solar System.

## BLACK HOLES & SINGULARITY

### CROSS SECTION OF A BLACK HOLE

When a massive star collapses under its own gravity, it forms a black hole that captures everything passing its event horizon. Not even light can escape. At the event horizon, time replaces space and points only forward. The flow of time carries everything towards a singularity inside black hole, where time ends.



### **Sagittarius A\***

25. The world could soon see what it looks like. Sagittarius A\* is one of two black holes whose photographs have been captured by Event Horizon Telescope project. Black holes do not emit or radiate anything, even light. So, there is no way their image can be captured. But area just outside its boundary, called the event horizon, which has vast amounts of gas, clouds and plasma swirling violently, does emit all kinds of radiations, even visible light.
26. Through a network of giant telescopes, scientists have collected radiations from outside event horizon of black hole and recreate an image. The black hole can be “seen” only because it is enclosed within a very bright, orange-red doughnut-shaped ring in image. Images of two black holes were captured this way. One of them, that of black hole at the centre of Messier 87 galaxy, 55 light years from Earth, was released by scientists last year.
27. The image of Sagittarius A\* was still being processed; it will be released in a few months.

### **The Kolkata connection**

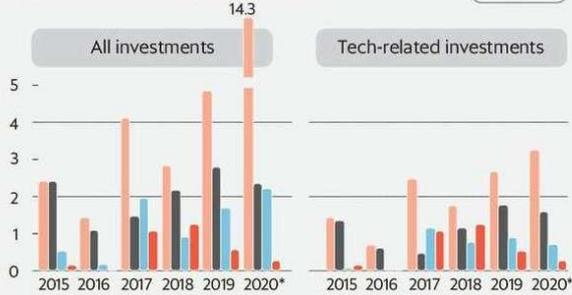
28. Dibyendu Nandi of IISER, Kolkata pointed to the contribution of Indian physicist Amal Kumar Raychaudhuri in the work of Penrose and Hawking on black holes. Raychaudhuri, based at Presidency College in Kolkata in the 1950s, had produced theoretical results while working on general relativity and come up with an equation that is named after him. That equation, and his results, proved critical in the work Penrose and Hawking later produced.
29. “In fact, when I first asked Penrose if I could attend one of the courses being offered by him, he asked me where I was from. And when I told him I had come from Presidency, Kolkata, Penrose asked whether I was related to Amal Kumar Raychaudhuri. I told him I was not, but I had been taught by him. Hawking too was in the room,” recalled Somak Raychaudhuri.
30. “I don’t know whether Penrose and AKR (Amal Kumar Raychaudhuri) ever met, because AKR was always based in Kolkata. But AKR’s results were something that was critical to their own work, and they did acknowledge that several times,” he said.
31. Roger Penrose of Britain, Reinhard Genzel of Germany and Andrea Ghez of the U.S. won the Nobel Physics Prize on Tuesday for their research into what the Nobel committee called “one of the most exotic phenomena in the universe, the black hole”.
32. Mr. Penrose, 89, was honoured for showing “that the general theory of relativity leads to the formation of black holes”, while Mr. Genzel, 68, and Ms. Ghez, 55, were jointly awarded for discovering “that an invisible and extremely heavy object governs the orbits of stars at the centre of our galaxy”, the jury said. Ms. Ghez is just the fourth woman to receive the physics prize since 1901 when the first Nobel prizes were handed out.
33. “I feel delighted to be recognised in that way because I think having visible role models can make a huge impact on young women thinking about becoming scientists,” Ms. Ghez said.
34. The first woman to win the prize was Marie Curie in 1903, who was also the first person to receive two Nobel prizes when she won the 1911 chemistry prize.
35. The term “black hole” refers to a point in space where matter is so compressed as to create a gravity field from which even light cannot escape. For years, physicists questioned whether black holes could really exist but Mr. Penrose, a professor at the University of Oxford, used mathematical modelling to prove back in 1965 that black holes can form.
36. His calculations proved that black holes — super dense objects formed when a heavy star collapses under the weight of its own gravity — are a direct consequence of Einstein’s general theory of relativity.
37. The Royal Swedish Academy of Sciences, which awards the Nobel Prize winners in physics, chemistry and economics, said Mr. Penrose’s 1965 article “is still regarded as the most important contribution to the general theory of relativity since Einstein”.
38. Mr. Penrose also worked closely with famed physicist Stephen Hawking, who died in 2018, and some experts lamented that he was no longer around to share the credit.
39. Mr. Genzel and Ms. Ghez have led research since the early 1990s focusing on a region called Sagittarius A\* at the centre of the Milky Way.
40. Using the world’s largest telescopes, they discovered an extremely heavy, invisible object — around 4 million times greater than the mass of the Sun — that pulls on surrounding stars, giving the galaxy its characteristic swirl.

# TOPIC 28. CHINA TECH COMPANIES

## MINT GRAPHITI

### Chinese investments in Indian tech firms are now declining after the 2017-18 boom

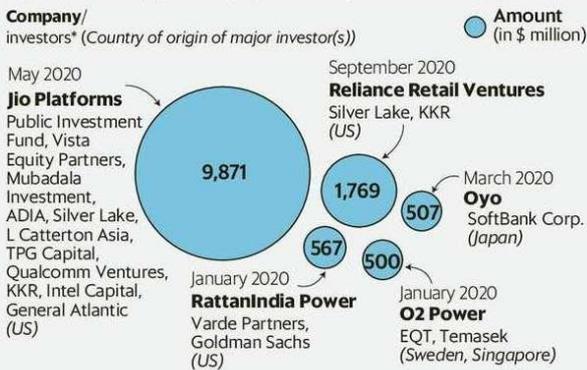
Private equity investment into India (in \$ billion) from investor firms based in various countries



Tech-related investments include private equity investments in internet-specific, semiconductor, computer software and hardware industries. \*as of 18 Sep

### Some of the biggest deals of 2020 in India were driven by US-based investors

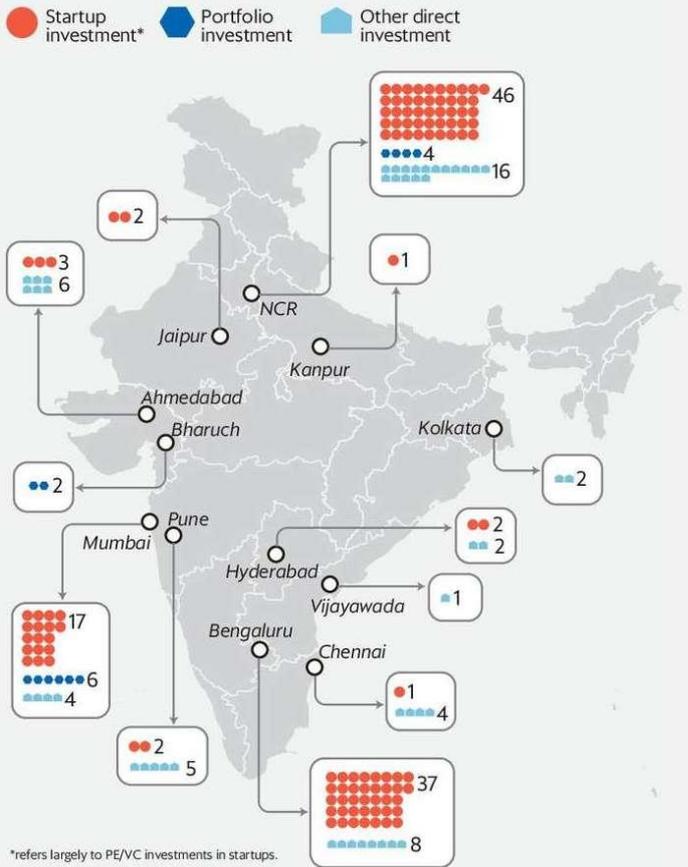
Top investments by private equity/venture capitalist firms in India (in 2020 so far)



\*Only PE firm investments listed here. Overall deals may also include investments from other sector-specific companies. For example, in the Jio deal, social media giant Facebook was the biggest investor. Data as of 23 September.

### Startups have been the prime beneficiaries of Chinese investments in the country

Number of companies that have received Chinese investments (data as of Feb 2020)

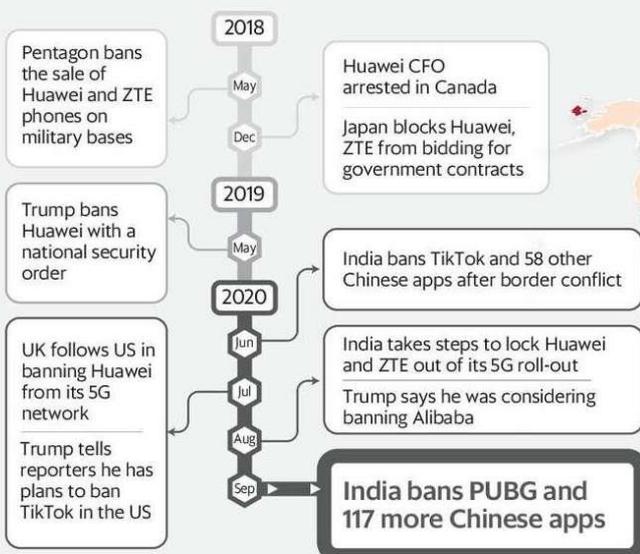


\*refers largely to PE/VC investments in startups.

The map has been sourced from a Gateway House report by Amit Bhandari and Aashna Agarwal.

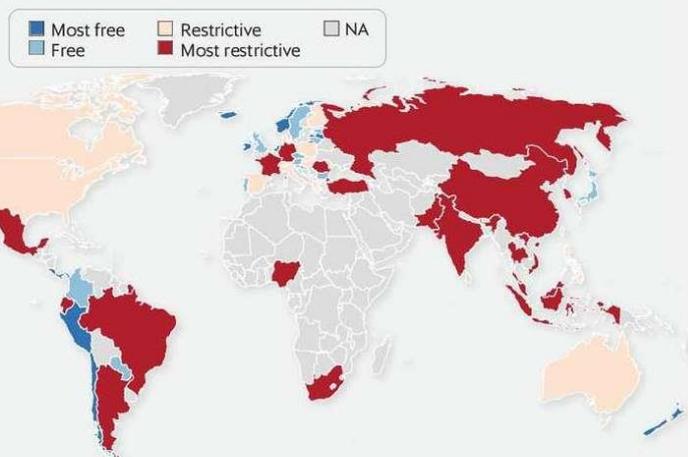
### Chinese tech firms have been grappling with roadblocks in other countries in recent years

A timeline of countries intervening to block Chinese technology firms



### China and India rank among the most restrictive economies for digital trade

Digital restrictiveness based on DTRI (2018)



The Digital Trade Restrictiveness Index (DTRI) covers trade policy restrictions in the digital economy, ranging from tariffs on digital products, restrictions on digital services and investments, restrictions on the movement of data, and restrictions on e-commerce. The index ranges from 0 (completely open) to 1 (virtually closed).

Source: Refinitiv, Venture Intelligence, ECIPE's Digital Trade Restrictiveness Index (2018), Gateway House report (March 2020), Mint research

1. Shunning China may hurt our tech Blocking China will leave a void in India's technological ecosystem, which has become dependent on the northern neighbour for tech as well as capital
2. Over the past few years, India has been a key battleground for American and Chinese tech companies. Now, American firms may have an edge.
3. As public sentiment turns against China amid an ongoing border conflict, New Delhi has clamped down hard on Chinese presence in the Indian tech ecosystem. Over 200 Chinese apps have been banned and Chinese investments in Indian startups are increasingly facing scrutiny from regulators.
4. Such moves were preceded by restrictions on foreign direct investment (FDI) imposed a few months ago to prevent opportunistic takeovers from China. India hopes that these moves will inhibit China's ability to exert influence in the country.
5. However, these curbs have created a void in India's startup universe. In the last few years, China invested significantly in Indian tech startups. According to data from Refinitiv, a financial solutions firm, since 2015, private equity (PE) firms from China have invested \$3.3 billion in India, largely in firms catering to the internet-based economy (**see charts 1a and 1b**).
6. These investments have declined sharply in recent months. Since April end, when the FDI rules were tightened, only six deals have been signed between Indian tech firms and Chinese PE firms. In comparison, 15 such deals were signed in January-April, and 37 last year. Not just investment funds, even Chinese tech firms have become cautious about investments in India. US-based firms seem to be picking up some of the slack.
7. Churn in tech ecosystem is partly an outcome of US-China tech war. "India is a battleground where Chinese investors can place bets against US companies,". "It is a 'David and Goliath' situation: Chinese investors back underdogs who start from zero. US companies come and invest in established business houses." (**see chart 2**).
8. India is an important frontier in tech war with a growing demand for mobile phones and internet. While defence and strategic community worries about Chinese influence on India's tech ecosystem, greater dependence on US is not without risks. It could bring back days when Indian ecosystem was vulnerable to events in Silicon Valley.
9. Over last 5 years, Chinese and other South Asian funds became a counterbalance to volatility of investments coming from US. With China stepping back entrepreneurs will again become dependent on US for big investments.
10. Some of biggest deals this year were driven by US-based investors, with Mukesh Ambani's Reliance Industries Ltd (RIL) cornering much of capital inflows.
11. A recent report by parliamentary standing committee on finance headed by Jayant Sinha suggested that Indian startups reduce their dependence on foreign sources altogether, be it from the US or China.
12. "Chinese and US tech companies have not come up on their own,". "(Similarly,) Indian government too should hold hands of these companies."
13. However, foreign funding remains crucial in a capital-starved economy. "Venture capital involves a lot of risk;—perhaps one out of 100 investments is really successful,". "In such a game, it is in India's interests to tap foreign capital that is willing to take such risks. The 99 bets that do not pay off for the venture capitalist still help Indian entrepreneurs learn, innovate, and pay the bills."
14. Sinha clarified in an interview with *Mint* that report primarily aimed to encourage removal of tax distortions that penalize domestic investments in startups rather than to block foreign investments. The government would, however, want to see startup ecosystem rely more on domestic sources of funding.
15. However, Indian sources, barring exceptions such as Ambani, simply do not have the kind of money needed to replace the likes of TikTok. "While domestic investors can provide early-stage funding to home-grown consumer apps, they don't have deep-enough pockets to provide multiple rounds of capital that some of these usage-driven apps need before they start generating revenue,".
16. Putting up firewalls around a nascent tech ecosystem will only starve Indian firms of capital and technological inputs. It is worth noting that doing business in India's digital economy is already quite difficult for overseas firms and investors. According to Digital Trade Restrictiveness Index estimated by European Centre for International Political Economy (ECIPE) in 2018, India is among the most protectionist countries in world (**see chart 4**).
17. China is no better, but early investments by Chinese state have helped country build a self-sustaining tech ecosystem. It is unlikely that a resource-strapped Indian state will be able to match such efforts.
18. At a time when India's economy has been crippled by a raging pandemic, the tech ecosystem has shown greater resilience. Policymakers should aim to foster competition and innovation in the sector rather than restrict either capital or technology flows. The state should provide a helping hand in developing tech capabilities. At the very least, the state should not come in the way of tech firms.

## TOPIC 29. CLOUD COMPUTING



1. On 22 September, Microsoft CEO Satya Nadella announced preview of Azure Orbital at Microsoft Ignite 2020 in New Orleans. According to Microsoft, Orbital is 'Ground Station as a Service (GSaaS)', which is aimed at helping its customers to communicate with, and analyse data from, their satellites or spacecrafts on a subscription basis.
2. The Redmond headquartered company, however, has competition in the skies. Almost five months earlier, International Business Machines Corp. (IBM) had announced a beta of its Cloud Satellite service. But it is Amazon Web Services Inc. (AWS), the cloud computing arm of Amazon.com, which has a head start in space.
3. Around 2 years ago, it launched AWS Ground Station to allow its customers to control their satellite communications, process data and scale operations without having to build or manage their own ground station infrastructure. On 30 Jun, AWS said it was establishing a new space unit called Aerospace and Satellite Solutions.

### **These are but a few cases in point to demonstrate that leading cloud computing service providers have begun flexing their muscles in space too. But why is there a sudden race to outer space?**

4. According to International Telecommunication Union (ITU), non-geostationary satellite orbits (NGSOs) such as medium earth orbits (MEO) and low earth orbits (LEO) are being increasingly used worldwide. NGSOs, unlike fixed or geostationary satellite orbits, move across sky during their orbit around earth. With space launches becoming more affordable and accessible, a slew of private companies is starting to rely on this new array of satellites.
5. They are used for applications like weather forecasting, surface imaging, communications, and video broadcasts. However, the data from these satellites need to be processed and analysed in data centres on the ground, which explains the term 'ground stations'.
6. While the cost of the satellite itself is falling, building and running ground stations can cost up to \$1 million or more, according to a recent blog post by Jeff Barr, chief evangelist for AWS. Complex data processing also requires a lot of computing power, and the huge data storage requirements only add to the cost.
7. Leading cloud computing service providers are now starting to offer satellite operators the option to use these ground stations on a 'pay-per-use' or subscription basis, thus, helping the latter save on capital expenditure costs by employing an operating expenditure model.
8. These ground stations, thus, can help satellite operators download high-resolution imagery faster, more regularly, and analyse the data with artificial intelligence (AI) tools—all of which results in faster and enhanced monitoring of changing climate patterns, forests and agriculture, among other things.
9. While Microsoft and IBM are testing their services, AWS Ground Station already has customers such as NASA's Jet Propulsion Laboratory and satellite operators Iridium Communications and Spire Global. It also has private sector customers such as Lockheed Martin, Maxar Technologies and Capella Space.

### **Lucrative market**

10. The worldwide cloud infrastructure services market continued to surge in the April-June quarter of this calendar year to touch \$34.6 billion, according to research firm Canalys. The growth was attributed to the consumption of cloud-based services for online collaboration and remote working tools, e-commerce, remote learning, and content streaming which hit new records during the lockdown.
11. During this period, AWS was the leading cloud service provider, accounting for 31% share of the total spend. Microsoft Azure came second, followed by Google Cloud and Alibaba Cloud.

12. The revenue of the cloud unit of Amazon totalled \$10.81 billion in the April-June quarter of this calendar year, accounting for 12% of its parent's revenue.
13. Microsoft, on the other hand, said its "commercial cloud surpassed \$50 billion in annual revenue for the first time" for the quarter ended June 30 (which is also its financial year ending). But it does not spell out what this 'commercial cloud' consists of.
14. Nevertheless, the space forays will only add to the revenue of all these companies.

#### **Battle lines in India**

15. Space deals will add spice in India too. India's cloud computing market was estimated at \$2.5 billion in 2018, dominated by infrastructure as a service (IaaS) and software as a service (SaaS), according to industry body Nasscom. It is forecast to touch over \$7 Billion in 2022.
16. AWS, Microsoft and Google are leaders on local turf too. Last August, for instance, Microsoft signed a deal with Reliance Jio Infocomm Limited (Jio)—a subsidiary of Mukesh Ambani-owned Reliance Industries Ltd (RIL). The agreement included deploying the Microsoft Azure cloud platform in Jio's data centers in locations across India.
17. This January, Google Cloud signed a deal with Bharti Airtel to cater to small and medium enterprises (SMEs) in India. However, Google said this July that it was pumping in \$4.5 billion into Airtel's rival Jio Platforms in exchange for a 7.7% stake. Not surprisingly, a month later, Bharti Airtel announced a multi-year agreement with AWS to deliver cloud solutions to big companies and SMEs in India.
18. According to Alok Shende, Managing Director of Ascentius Insights, "fusion of cloud computing with networking, linked by a satellite, is expected to shave off milliseconds in transferring data from source to destination. This is the holy grail in many applications, more specifically in finance and in mission-critical applications. There are many India-centric applications (like defence and in the stock markets) where this could play a powerful role."
19. He believes that "for Microsoft, particularly, this move opens a new avenue to entrench itself in the enterprise market where it has traditionally been a strong player on the application side but has lost the leadership position in terms of market share for cloud."
20. Jayanth Kolla, founder and partner of Convergence Catalyst points out that India has always been a strong player in the space sector with the Indian Space Research Organization (Isro) developing and launching satellites at a fraction of global costs. He believes that the Indian government's decision to open up India's space sector to private players is an encouraging sign.
21. "It has already resulted in Indian space tech startups such as Pixxel, Bellatrix Aerospace, Vesta Space and Agnikul raising over \$20 million funding from venture capitalists (VCs) in the last six months. TV media, agriculture, telemedicine and logistics are a few sectors that can benefit from strong satellite communication and space technology development. The ground station services launch by Microsoft and AWS will only expedite this ecosystem development significantly in India," says Kolla.
22. Sanchit Vir Gogia, chief analyst and founder of Greyhound Research, concurs that the timing of this space move is right since many organizations are now beginning to try new use-cases by tapping into geospatial data (data related to a specific location on earth) that is omnipresent, given the proliferation of devices and edge computing devices.
23. "This space is increasingly getting busy with the likes of AWS and IBM investing money and resources to cater to this opportunity," notes Gogia. He cautions, however: "We believe the trick in making such an offering successful is to ensure that it is cheap to start with, since most of these projects are nothing more than trials and, hence, have an extremely high failure rate."

#### **The distributed cloud**

24. Space is just an additional frontier for the leading cloud services providers. It all began when companies, which traditionally used servers for their computing needs, realised that they could lower costs by accessing IT resources over the internet, and paying only for the services they needed, reducing capex—a trend we now know as cloud computing.
25. Many companies today use private clouds (on-premise), public clouds (on a network, typically the internet) and hybrid clouds (combining public and private). User companies, though, became wise and began adopting a 'multi-cloud' vendor approach to avoid being locked in by any single technology or cloud vendor.
26. With billions of devices getting connected to each other as part of the Internet of Things (IoT) trend, computing is now also getting done at the so-called "edge", which simply means near the source of the data.
27. General Electric Co. (GE), for instance, believes cloud computing is best suited to situations that demand actions such as significant computing power, management of huge data volumes from across plants, asset health monitoring and machine learning. Edge computing, on the other hand, makes sense in places like mines or

offshore oil platforms that have bandwidth constraints, which make it impractical or very expensive to transmit data from machines to the cloud.

28. During his speech at the Ignite event, for instance, Nadella pointed out that Microsoft was “extending Azure from under the sea to outer space”. He was referring to Project Natick that aims to serve customers in areas near large bodies of water. Natick uses AI to monitor signs of failure in its servers and other equipment.
29. Going forward, Microsoft says it will explore powering a Natick data center by “a co-located ocean-based green power system, such as offshore wind or tide, with no grid connection”.
30. Similarly, other than deploying internet balloons in space to provide broadband services, Google also provides services to companies like Planet Labs Inc. The US-based aerospace and data analytics company uses Google Cloud platform to process all of its satellite images and Google Cloud storage to host its image archive.
31. These moves have given rise to a trend called ‘Distributed Cloud’, which research firm Gartner describes as “distribution of public cloud services to different physical locations”.
32. By 2023, posits a 22 January note by Gartner, “the leading cloud service providers will have a distributed ATM-like presence to serve a subset of their services for low-latency application requirements... ‘Micro data centers’ will be located in areas where a high population of users congregates, while pop-up cloud service points will support temporary requirements like sporting events and concerts.”
33. Greyhound Research believes offerings such as ground stations will be highly valuable in the next wave of investments in more distributed computing environments. “More than 7 in 10 of our end-user inquiries with global majors have confirmed that organizations, in the next 3-5 years, will use a large variety of computing environments and make them more contextual to the use-case,” says Gogia. “This change is likely to be paced multiple times, given the investments in edge networks and 5G that allow remote sites in utilities, oil and gas, manufacturing, and many other scenarios,” he adds.
34. The distributed cloud market is forecast to reach \$3.9 billion by 2025, growing at a CAGR of 24.1% during the forecast period from 2020-2025, according to market research firm, IndustryARC. Security, though, remains a concern if proper protocols and policies are not adhered to in a distributed cloud.
35. For now, though, ground stations that cater to satellite companies will remain one big component of the distribution cloud. A race is clearly on and all the main players are looking up at the sky.

## TOPIC 30. TRP

1. With Mumbai police alleging that three television channels are involved in manipulating TRPs, here is a look at the whole issue.

### Why is TRP important?

2. In simple terms, anyone who watches television for more than a minute is considered a viewer. A viewer can be as young as a two-year-old. TRP, or Target Rating Point, is the metric used by marketing and advertising agencies to evaluate this viewership.
3. In India, the TRP is recorded by the Broadcast Audience Research Council using Bar-O-Meters that are installed on televisions in selected households.
4. As on date, the BARC has installed these meters in 44,000 households across the country. Audio watermarks are embedded in video content prior to broadcast.
5. These watermarks are not audible to the human ear, but can easily be detected and decoded using dedicated hardware and software. As viewing details are recorded by the Bar-O-Meters, so are the watermarks.

### How are the households selected?

6. Selection of households is a two-stage process. The first step is establishment survey, a large-scale face-to-face survey of a sample of approximately 3 lakh households from target population. This is done annually. Out of these, households which will have Bar-O-Meters or what BARC calls recruitment sample are randomly selected.
7. The fieldwork to recruit households is not done directly by the BARC. On its website, it has said that the viewing behaviour of panel homes is reported to BARC India daily. Coincidental checks either physically or telephonically are done regularly. Certain suspicious outliers are also checked directly.
8. "BARC India also involves a separate vigilance agency to check on outliers that it considers highly suspicious,". And as per the guidelines of the Ministry of Information and Broadcasting, these households rotate every year.
9. This rotation is in such a manner that older panel homes are removed first while maintaining representativeness of panel. The rotation is conducted in a staggered manner every month. Ministry guidelines further say that the secrecy and privacy of panel homes must be maintained and asked BARC to follow a voluntary code of conduct.

### What are the loopholes in the process?

10. The Mumbai police alleged that households were being paid to manipulate the TRP.
11. "As in all our previous cases of suspected panel homes intrusions, BARC India continues to follow its established vigilance and disciplinary guidelines. BARC remains steadfastly true to its purpose to accurately and faithfully report 'What India Watches'. BARC India appreciates the efforts of the Mumbai Police and will provide the support asked of it," a BARC India spokesperson said.
12. Several doubts have been raised on many previous occasions about the working of the TRP. On Wednesday, Information and Broadcasting Minister Prakash Javadekar had said that the TRP process needs a rethink and attacked what he called "TRP journalism".
13. Public broadcaster Doordarshan has time and again said that TRP did not reflect the actual viewership. As per reports, about 70% of revenue for television channels comes from advertising and only 30% from subscription.
14. Mumbai Police Commissioner Param Bir Singh said on Thursday that police are looking into a **scam about manipulation of TRPs** (Television Rating Points) by rigging the devices used by the Broadcast Audience Research Council (BARC) India, which has the mandate to measure television audience in India.

### What is TRP?

15. In simple terms, TRPs represent how many people, from which socio-economic categories, watched which channels for how much time during a particular period. This could be for an hour, a day, or even a week; India follows the international standard of one minute. The data is usually made public every week.
16. A consultation paper about television audience measurement and ratings in India floated by Telecom Regulatory Authority of India (TRAI) in 2018 defined its importance as: "On basis of audience measurement data, ratings are assigned to various programmes on television. Television ratings in turn influence programmes produced for viewers. Better ratings would promote a programme while poor ratings will discourage a programme. Incorrect ratings will lead to production of programmes which may not be really popular while good programmes may be left out."
17. A FICCI-EY report on India's media and entertainment industry for last year said size of TV industry was Rs 78,700 crore last year, and TRPs are main currency for advertisers to decide which channel to advertise on by calculating the cost-per-rating-point (CPRP).

### **What is BARC?**

18. It is an industry body jointly owned by advertisers, ad agencies, and broadcasting companies, represented by Indian Society of Advertisers, Indian Broadcasting Foundation and Advertising Agencies Association of India. Though it was created in 2010, I&B Ministry notified Policy Guidelines for Television Rating Agencies in India on January 10, 2014 and registered BARC in July 2015 under these guidelines, to carry out television ratings in India.

### **How is TRP calculated?**

19. BARC has installed “BAR-O-meters” in over 45,000 empanelled households. These households are classified into 12 categories under the New Consumer Classification System (NCCS), the so-called “new SEC” adopted by BARC in 2015, based on the education level of the main wage earner and the ownership of consumer durables from a list of 11 items ranging from an electricity connection to a car.
20. While watching a show, members of household register their presence by pressing their viewer ID button — every person in household has a separate ID — thus capturing duration for which channel was watched and by whom, and providing data on viewership habits across age and socio-economic groups. Panel chosen to capture TRPs must be representative of country’s population, and methodology must be economically viable for industry.

### **How can TRP data be rigged?**

21. If broadcasters can find the households where devices are installed, they can either bribe them to watch their channels, or ask cable operators or multi-system operators to ensure their channel is available as the “landing page” when the TV is switched on.
22. For TRPs, it does not matter what entire country is watching, but essentially what 45,000-odd households supposed to represent TV viewership of country have watched. Broadcasters can target these households to fudge actual viewership data.
23. “One of biggest challenges has been absence of any specific law through which agents / suspects involved in panel tampering / infiltration could be penalised”. It noted that BARC “has filed FIRs in various police stations against agents/ suspects involved in panel tampering/infiltration” but its efforts “to mitigate panel tampering / infiltration have been hampered due to absence of any legal framework”.

### **How does panel tampering affect TRPs?**

24. TRAI mentioned “panel infiltration has a significant impact when the panel size is smaller” and “with the increase in panel size, infiltration of panel homes becomes challenging”.
25. A senior industry insider said BARC has filed multiple FIRs in the past “as it tracks unusual viewership behaviour and takes action”. In the current case, the insider said an FIR was filed against employees of Hansa Research, which BARC hires for certain field jobs like going to panel households. BARC hires multiple agencies so that no single agency has the entire map of panel households across the country.
26. The source cited the example of English TV news, which has a small share of the national viewership pie at around 1.5%, which means that for around 45,000 panel households, around 700 households will contribute to the viewership. “What actually happens is that while your sample is around 700, not all of them are watching English TV news every day. Actual watching will be around 350 homes.” In such a scenario, the source said, “if you manage to rig 10 among the heavy viewing homes, then you can swing the needle big time”.
27. When sample is smaller, “manipulation becomes easier”. In a genre like English news, “because fewer homes will have larger weightage, change in behaviour of one home gets amplified at a much larger scale nationwide”.
28. Additionally, as each channel tries to project itself as a market leader in a particular segment, it slices the data into socio-economic brackets on the basis of NCCS, age, gender, time slots (primetime) etc to find the perfect data slice. This too increases relative error in the data, because of the small sample size.

### **How often have allegations been made?**

29. For over a decade, questions have been raised by people from within the industry. In a letter to the BARC chairman in July, News Broadcasters Association president Rajat Sharma, who owns India TV News, complained against the ratings of TV9 Bharatvarsh, and said “several news broadcasters have written to BARC drawing their attention that every week’s ratings are not in correlation to the basics of television” and “the manipulated data is being released week after week without taking any remedial action”. Sharma had said that “these are corrupt practices, which are being done with complete connivance with BARC and the broadcaster”.
30. 2 years ago, I&B Ministry had raised concerns that BARC was under-reporting viewership of Doordarshan, and floated the idea of chip-based activity logs through all set-top boxes. The idea was finally rejected.
31. In 2017, editor of one of top five English news channels had written to BARC about how a few households from Gujarat were contributing heavily to a rival channel’s overall viewership.

## TOPIC 31. NOBEL PRICE IN MEDICINE

1. This year's Nobel Prize in Physiology or Medicine rewards an effort that eventually made blood transfusion safer for everyone. American scientists Harvey Alter and Charles Rice, and Michael Houghton of the UK, **have been recognised** for their contributions to the discovery of a new virus that was the cause of a vast majority of chronic hepatitis cases, or cases of serious liver inflammation, in patients who required blood transfusion. This virus was eventually called Hepatitis C virus.
2. Since the discovery and identification of the virus in the 1970s and 1980s, a cure has been found for the disease, and effective anti-viral drugs are now available. Tests have been developed to identify blood that has this virus, so that infected blood is not given to any patient.
3. Still, according to the World Health Organization, about 71 million people (6 -11 million of them in India) have chronic infection with the Hepatitis C virus, which also happens to be major cause of liver cancer. In 2016, this viral infection led to the death of nearly 400,000 people across the world. A vaccine for the disease has still not been developed.

### **What was known about hepatitis before the discovery of the Hepatitis C virus?**

4. Before the discovery of the Hepatitis C virus, two other viruses were known to cause hepatitis in patients. The Hepatitis A virus was known to spread mainly through contaminated food and water, and caused a relatively milder form of liver inflammation. Hepatitis B, discovered in the 1960s, was known to transmit mainly through infected blood, and caused a more serious form of the disease. Incidentally, the discovery of the Hepatitis B virus too was rewarded with a Nobel Prize in Medicine, given to Baruch Blumberg in 1976. There are vaccines available for this disease now.
5. The discovery and identification of Hepatitis B virus facilitated the development of a diagnostic test to detect its presence in blood. Thereafter, only blood sanitised from this virus would be given to patients, but it was observed that even this sanitised blood was able to prevent only 20% of the blood-borne hepatitis cases. It was then that the search for the new virus began.

### **How was it found, and what was the contribution of each Nobel winner?**

6. In the 1960s, Alter had collaborated with Blumberg, the 1976 Nobel winner. Alter later moved to the US National Institutes of Health (NIH), where he continues to work. At NIH, Alter worked at the blood bank and had access to a large collection of blood samples which facilitated his investigations into cases of hepatitis caused after blood transfusion. It was Alter, along with some of his colleagues, who was able to define the characteristics of the then unknown virus.
7. But despite over 10 years of effort, Alter and his collaborators were not able to establish the identity of the virus. That work was accomplished by Houghton, who was working independently at Chiron Corporation, a US biotechnology firm. After painstaking work screening over a million DNA sequences, Houghton was able to identify the new virus in 1982, after which it was named Hepatitis C.
8. In 1997, Rice, then working at Washington University, was able to conclusively show that it was indeed this virus that was causing chronic hepatitis in human beings.

### **Why is it significant?**

9. The Nobel Prize website said the discovery of the Hepatitis C virus (HCV) was one of the important milestones in improvement in public health that had raised hopes for eliminating the disease.
10. "The discoveries of HBV and HCV, and the establishment of effective screening routines, have virtually eliminated the risk of transmission via blood products in many parts of the world. Thanks to the development of highly effective drugs against HCV, it is now possible, for the first time in human history, to foresee a future where the threat of this virus infection is substantially reduced and hopefully soon eliminated," it said.
11. Shahid Jameel, a virologist who has worked extensively on Hepatitis E virus (discovered later), said the simplest way to understand the importance of the work of these scientists was to know that the blood that is given to all kinds of patients has now become a lot safer. "Three main causes of blood-borne infections — Hepatitis B, Hepatitis C and HIV — all have been identified, and they no longer infect the blood that is required by patients. This has been a direct result of scientists like them. From a public health point of view, their discovery of the Hepatitis C virus was therefore a very big breakthrough," said Jameel, now director of Trivedi School of Biosciences at Ashoka University.

### **How is Hepatitis C treated?**

12. "A vaccine for this has not been developed mainly because it's a very fast-changing virus. But it is possibly the only chronic virus for which a definitive cure is now available," Jameel said. "Anti-viral drugs could be developed based on the understanding of the biology of the virus to which Harvey's lab contributed very significantly. In

fact, there were a few others whose contributions were equally significant, people like Robert Purcell and Ralf Bartenschlager, but they seemed to have missed out on the Prize only because the Nobel cannot be shared by more than three people. But all in all, a very well deserved recognition for Harvey Alter, Charles Rice, and Michael Houghton,” Jameel said.

Indian effort: One of the important steps towards finding a vaccine was taken by an Indian company in the late 1990s. Hyderabad-based Shantha Biotech, which produced the first recombinant DNA-based vaccine for Hepatitis B infection, had begun work on Hepatitis C as well. It had funded the work of a US-based Indian-origin scientist who had succeeded in sequencing the entire genome of the Hepatitis C virus present in the Indian population. But no progress was made after that.

13. “It was an important work at that time, in 2001. We couldn’t carry it further for some reason. But no other effort has also succeeded till now,” Dr Varaprasad Reddy, founder of Shantha Biotech, told The Indian Express.
14. Two Americans and a Briton won the 2020 Nobel Prize for Medicine on Monday for identifying the Hepatitis C virus, in work spanning decades that has helped to limit the spread of the fatal disease and develop antiviral drugs to cure it.
15. The discoveries by scientists Harvey J. Alter, Charles M. Rice and Briton Michael Houghton meant there was now a chance of eradicating the Hepatitis C virus.
16. The three share the 10 million Swedish crowns (\$1.1 million) award for discovering and proving that a blood-borne virus could cause Hepatitis C, which afflicts more than 70 million people and causes about 4,00,000 deaths each year.
17. Nominations for this year’s award preceded the global spread of the new coronavirus pandemic, but the choice of winners recognises the importance of identifying a virus as the first step in winning the battle against a new disease, said Thomas Perlmann, secretary general of the Nobel Assembly.
18. It’s the second Nobel Prize for Medicine for hepatitis research, after Baruch Blumberg won in 1976 for determining that one form of blood-borne hepatitis was caused by a virus that came to be known as Hepatitis B.

### Three steps

19. The shared prize recognises research dating back to the 1960s when Dr. Alter, working at the U.S. National Institutes of Health, found liver disease could be spread by blood transfusions that weren’t caused by Hepatitis A or B. It was a team led by Dr. Houghton, then working for pharmaceuticals firm Chiron, which was able in the mid-1980s to create a clone of a new virus from fragments found in the blood of an infected chimpanzee.
20. This virus, belonging to the Flavivirus family, was named Hepatitis C.
21. Its identification made it possible to develop tests to screen bloodbank supplies and greatly reduce the spread of the disease, which can cause cirrhosis and liver cancer.
22. The final piece of the jigsaw puzzle came when Dr. Rice, then at Washington University in St. Louis, was able to use genetic engineering to generate a version of the Hepatitis C virus and demonstrate that it alone could cause symptoms in a chimpanzee comparable to an infection in humans.



## TOPIC 32. KETO DIET



1. Actor Mishti Mukherjee, 27, who had worked in Bangla, Telugu and some Hindi films, died on October 2 in a hospital in Bengaluru. Her family said **Mukherjee suffered from kidney failure** as she had been following a ketogenic diet.

### **What is a ketogenic, or 'keto' diet, and when can it turn unhealthy?**

2. The ketogenic diet is one of the most popular weight loss diets the world over. It is a high-fat, moderate-protein and low-carb diet that helps in weight loss by achieving ketosis — a metabolic state where the liver burns body fat and provides fuel for the body, as there is limited access to glucose.

### **What constitutes a keto diet?**

3. A classic keto requires that 90 per cent of a person's calories come from fat, six per cent from protein and four per cent from carbs. "But there are many versions doing the round, since this one was designed for children suffering from epilepsy to gain control over their seizures. Typically, popular ketogenic diets suggest an average of 70-80 per cent fat, 5-10 per cent carbohydrate, and 10-20 per cent protein," explains nutritionist Ruchi Sharma, founder of EAT.FIT.REPEAT.
4. "Many versions of ketogenic diets exist, but all ban carb-rich foods. In the beginning, it may seem easier to follow a keto diet as there's no need to count calories and the rules are very simple, but eventually adherence becomes very difficult," she says.

### **What are the food items that make the diet?**

5. One can have eggs, chicken and turkey in poultry, fatty fish like salmon and mackerel, full-fat dairy, nuts and seeds like Macadamia nuts, almonds, walnuts, pumpkin seeds, peanuts and flaxseeds.
6. There is also nut butter like natural peanut, almond and cashew butters. It also consists of healthy fats like coconut oil, olive oil, avocado oil, coconut butter and sesame oil. There are Avocados, and non-starchy vegetables like the greens, broccoli, tomatoes, mushrooms and peppers.

### **How does keto impact the body?**

7. "If you starve the body of carbohydrate, after burning out the glucose, the liver starts breaking down fats for energy. Ketosis is common in all kinds of fasting, but in a keto diet, when one is feeding it by giving a lot of fats from outside without carbs, it can become mildly toxic," says endocrinologist Dr Ambrish Mithal, Chairman and Head of Endocrinology and Diabetes at Max Healthcare – Pan Max, Saket, New Delhi.
8. It may lead to many nutrient deficiencies such as carbohydrates, proteins, vitamins (especially vitamin A, D, E, & K) and minerals like calcium, phosphorus, sodium. "These are essential food groups, and their absence in the diet can be the cause of numerous deficiency diseases," says Sharma.
9. Extreme carbohydrate restriction can lead to hunger, fatigue, low mood, irritability, constipation, headaches, and brain fog, which may last days to weeks

### **What impact does Keto diet have on our kidneys?**

10. "Even the moderate increase in protein needs to be carefully monitored, especially in those who are already suffering from a chronic kidney disease, as it could lead to kidney failure," Sharma says, adding that one should get a thorough assessment and make sure they have normal kidney function before choosing this diet.
11. "This diet could lead to increased stress on the kidneys and result in kidney stones, as they are made to work overtime," says Dr Rushi Deshpande, Director Nephrology, Academic at Jaslok Hospital & Research Centre,

Mumbai. "If a person has died while on a keto diet, it's likely that there was some underlying kidney disease," adds Dr Mithal.

#### **How did the Keto diet become popular?**

12. Keto had become popular as a therapy for pediatric epilepsy in the 1920s and 30s. "But it gained considerable attention as a potential weight loss strategy when the low-carb diet craze started in the 1970s with the Atkins diet (a very low-carbohydrate, high-protein diet, which was a commercial success and popularised low-carb diets to a new level)," says Sharma.
13. In the past five years, the keto diet found more popularity after a lot of celebrities, including Halle Berry, Kim Kardashian and Gwyneth Paltrow, started endorsing it. In India, it made news after comedian Tanmay Bhat was learnt to have undertaken the diet to lose weight.

#### **Why is it so popular?**

14. Because it has turned out to be one of the quickest ways of losing weight. In the first few days after starting the diet, one experiences a significant loss of water weight, and to the average person, the diet appears to be working, says Sharma.
15. "Everyone these days is looking for quick fixes. Many have failed on conventional diets, and want something extreme. Like with most fad diets, you can quickly lose weight on keto, but it is hard to maintain as the compliance is very low," says Sharma.

#### **Who should opt for a keto diet?**

16. "A ketogenic diet may be an option for people who have had difficulty losing weight with other methods. But in my opinion, if you are looking to lose weight with keto, drop the idea. This urgency or desperation to lose in four to eight weeks weight you've been piling on for months and years can turn fatal," says Sharma.
17. "I do not advise my patients to undergo keto, but if they insist, I tell them they can try it for four to eight weeks, at the most three months. But I've noticed that most patients can't sustain it," says Dr Mithal.

#### **Should one undertake keto without medical supervision?**

18. It is advised that a person undergoes the diet under strict monitoring of a nutritionist or dietician. A health care provider or a nutritionist can assess one's needs and can guide about clean keto vs whatever is available on the internet. "Clean keto focuses on whole, nutrient-dense foods and puts more emphasis on food quality. Dirty keto is also called lazy keto, as it allows for highly processed and packaged foods," says Sharma.

#### **Common mistakes**

19. Resorting to Google and starting the diet on your own. "While one can technically attain ketosis and garner some of the benefits using this approach, one may miss out on several key nutrients and increase the risk of disease. By choosing processed foods over nutritious, whole foods, you may become deficient in micronutrients like calcium, magnesium, zinc, folic acid, and vitamins C, D, and K," says Dr Mithal, adding that a number of keto supplements and alternatives — like keto coffee, keto chocolates — available in the market are unreliable.

#### **What are the precautions one should take?**

20. Doctors suggest that one should increase the intake of water if one is undergoing keto. They should make sure that they remain under medical supervision to check if any side effects come up.
21. "One should see how one's adherence is towards extreme diets, and remember that 'yo-yo diets' that lead to rapid weight loss fluctuation are associated with increased mortality. Instead of engaging in the next popular diet, one should embrace a diet that is sustainable over the long term," says Sharma.
22. She adds that a "balanced, unprocessed diet, rich in very colorful fruits and vegetables, lean meats, fish, whole grains, nuts, seeds, olive oil, and lots of water" is a better idea.

#### **How is keto different from a low-carb diet?**

23. Most of the modern weight loss diets are low on carbohydrates, but the distinction there is that some of them are low only in refined carbohydrates, and high in protein.
24. But in keto, the carbs are below 10 per cent, which discourages you from having fruits and vegetables, says Dr Mithal. "When following a low carb diet, it's common to increase your intake of protein, healthy fats, and vegetables to replace the carbs and promote fullness. By restricting carbs, you eliminate many high calorie foods from your diet. All these factors may work together to reduce your overall calorie intake and promote weight loss."
25. A low-carb diet has been linked to several health benefits in people with diabetes, including weight loss and improved blood sugar control and cardiovascular risk factors. Whereas when following a keto diet, the goal is to reach nutritional ketosis. "This is achieved by consuming fewer than 50 grams of carbs per day while keeping protein intake moderate and increasing fat intake drastically," explains Sharma.

## TOPIC 33. VACCINE NATIONALISM

1. Even as the novel coronavirus vaccine is still a few months away, several wealthier countries like Britain, France, Germany and the US have entered into pre-purchase agreements with Covid-19 vaccine manufacturers, a development that has come to be known as "**vaccine nationalism**". There are fears that such advance agreements will make the initial few vaccines unaffordable and inaccessible to everyone apart from the rich countries in a world of roughly 8 billion people. Similar arrangements have been reached by European Union, and some other countries like Mexico, as well.
2. This has led to the **World Health Organization (WHO) warning** that nations that hoard possible Covid-19 vaccines while excluding others would deepen the pandemic. "We need to prevent vaccine nationalism. Sharing finite supplies strategically and globally is actually in each country's national interest," WHO chief Tedros Adhanom Ghebreyesus had said. Experts agree that frontline health workers, those on emergency duties, the elderly and the sick, pregnant women, and other similarly vulnerable population groups across the world must be given first access to the vaccines

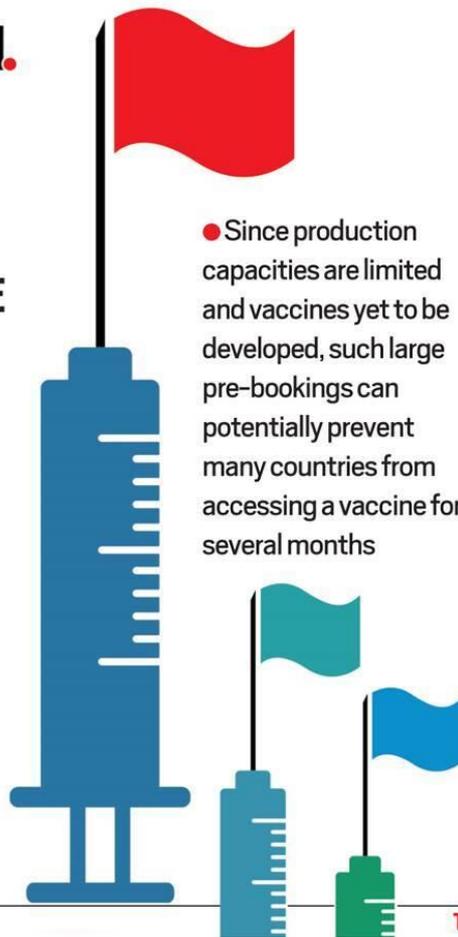
**EXPRESS**  
**explained.**

**CORONAVIRUS**  
**VACCINE TRACKER**

### WHAT IS VACCINE NATIONALISM?

The rush by some rich countries to **pre-book** large number of coronavirus vaccines under development has led to the coinage of the term vaccine nationalism

● Since production capacities are limited and vaccines yet to be developed, such large pre-bookings can potentially prevent many countries from accessing a vaccine for several months



#QUIXPLAINED



The United States has booked more than **800 million doses**



That makes it **more than two** for every American citizen

● It has entered into agreements with six different companies. Not all may be successful

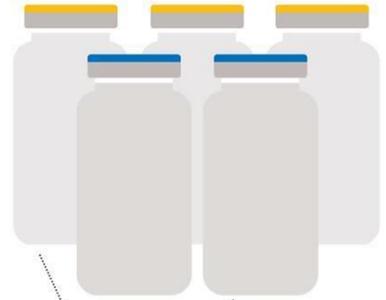
Total value of deals: more than **US\$ 10 billion**

#QUIXPLAINED

2



The United Kingdom has assured supplies of at least **340 million doses**



That is, **more than five** for each of its citizens

● It has agreement with six of the leading vaccine developers



The European Union has booked **600 million doses**, with two companies

● It is in talks with four more developers

#QUIXPLAINED

3



India has **not pre-booked** supplies, but Indian companies have obtained licenses from developers to manufacture their own vaccines

● Agreements with at least four developers, more in the pipeline

**INDIAN COMPANIES ARE ALSO DEVELOPING VACCINES**

COUNTRIES SUCH AS AUSTRALIA AND MEXICO HAVE ALSO PRE-BOOKED ORDERS

#QUIXPLAINED

4

**The World Health Organisation** is leading a global facility to ensure universal access of vaccines. This facility is also pre-booking vaccines of several developers. But the idea is to ensure that the neediest in every country get the vaccine first

**THIS FACILITY IS STARVED OF FUNDS**



COUNTRIES HAVE PLEDGED ONLY **US\$ 2 BILLION** TILL NOW

IT REQUIRES **US \$16 BILLION**

TEXT: AMITABH SINHA; GRAPHIC: MITHUN CHAKRABORTY

#QUIXPLAINED

5

## TOPIC 34. FLU AND COVID-19



1. As influenza season approaches, some Americans, and especially parents, are worried that if they or their children should become ill, it may not be easy to know which disease they have — the flu or COVID-19.
2. They are correct. Most symptoms of the two diseases are so similar that short of a test — or two or three tests — it won't be possible to know for sure. But there are some clues. (And it is possible to have both infections at the same time; some patients in China this year were found to have both.)

### **But first: Get a flu shot.**

3. It is not yet clear whether the United States will have much of a flu season this year. Flu activity in the Southern Hemisphere, which is often predictive of activity in the U.S., was 99% below normal during its winter. Epidemiologists believe that is because Australians, New Zealanders, South Africans, Chileans and other residents of the southern half of the globe were wearing masks, staying several feet apart and washing their hands to prevent transmission of the coronavirus. Those same precautions also prevent flu transmission.
4. Because there are very few flights between the Southern Hemisphere and the U.S. right now, there may be no opportunity for the usual four seasonal influenza strains to “reseed” themselves among Americans. If they do, masks and social distancing should limit their spread.
5. Nonetheless, experts urge all Americans to get flu shots. Before it ended abruptly during lockdown, last year's flu season was on track to be one of the worst in recent memory. The number of children who died was equal to that in the 2017-18 season, which was the worst since the Centers for Disease Control and Prevention began tracking flu-season deaths in 1976.
6. If you catch the flu, experts say, having had the shot makes it much less likely that you will be hospitalized or die.
7. Because of the fears of a “twindemic,” flu shots were made in large numbers this year and distributed to pharmacies and doctor's offices beginning in August, which is early. As of late last month, some doctors reported difficulty ordering as many as they want, but pharmacy chains say they are getting steady supplies. To find a flu shot, try [vaccinefinder.org](http://vaccinefinder.org) or one of the chain pharmacy websites, such as [CVS.com/immunizations/flu](http://CVS.com/immunizations/flu).

### **Assessing the difference between a cold and the flu.**

8. There are at least 100 viruses that can cause the common cold, but only four that cause seasonal flu. Many people who catch colds assume they have flu, but experts consistently say the same thing about how to tell the difference: “Flu makes you feel as if you were hit by a truck.” The fever, aches and headaches of a bad case of influenza are generally worse than a case of respiratory syncytial virus, rhinovirus or other common cold viruses.
9. Everyone knows the symptoms of the flu: fever, headaches, body aches, sore throat, runny nose, stuffed sinuses, coughing and sneezing — and, for infants, ear infections. Some victims, especially children, get diarrhea or vomiting too.
10. In severe cases, the most common complication is pneumonia. The typical signs of a flu pneumonia are shortness of breath, especially when you exert yourself, and unusually rapid breathing — doctors typically look for that in children — and sometimes pain in the chest or back.

### **Identifying COVID-19 by its flulike and ‘wacky’ symptoms.**

11. Knowing whether you have COVID-19 is much more complicated because there are so many different — and sometimes pretty wacky — symptoms, many of which echo those of the flu.
12. The most common symptoms are high fever, sometimes with chills, a dry cough and fatigue.
13. The one sign that really distinguishes the two infections is that many COVID-19 victims suddenly lose their sense of smell — not because they have a stuffy nose but because they don't register even strong odors like onions or coffee. Not all virus victims get anosmia, the formal name for loss of smell, but one study found that 87% did.

14. Less common symptoms include a sore throat, congestion, runny nose, vomiting, diarrhea, stomach pain and feeling somewhat out of breath when exerting yourself. Some victims have red or itchy eyes, and some get redness or blisters on their fingers or toes — so-called COVID toes, which resemble chilblains.
15. More dangerous symptoms — which mean you should get immediate medical attention — include serious breathing difficulty; pain or pressure in the chest; blue lips or blue face; confusion or incoherent answers to simple questions; and collapsing or losing consciousness.
16. Adding to the disease's fearsome nature is that it can cause blood clots that lead to heart damage, brain damage and lung damage. And even some cases that appear mild or asymptomatic create signs of what doctors believe may be long-lasting heart damage.
17. Another unusual aspect of COVID is that people sometimes develop pneumonia without realizing how sick they are. Doctors are unsure why; one theory is that the air sacs in the lungs are damaged in a way that does not cause the buildup of carbon dioxide, which creates that "desperate for air" feeling.
18. Many doctors recommend buying a pulse oximeter, a fingertip device that measures oxygen levels in the blood. Multiple readings below 92% should trigger a call to a doctor. The earlier pneumonia is caught, the better the outcome.

**Understand that COVID-19 symptoms in children are similar to those in adults.**

19. Children generally get through COVID-19 with few problems; for the youngest ages, it is thought to be less dangerous than the flu.
20. Children have the same constellation of symptoms that adults do, although parents may be more likely to notice it when their youngsters have runny noses, red eyes and the exhausted crankiness that comes from just feeling terrible.
21. Dangerous symptoms include difficulty breathing, bluish lips, confusion or inability to wake up, and intense abdominal pains or inability to keep down any liquids. If there are any signs of these, it is important to get a child to a doctor or hospital quickly.
22. In very rare cases, children can get multisystem inflammatory syndrome, which is thought to be caused by an overactive immune response and can cause shock and organ failure.
23. But doctors emphasize that it is rare and that parents should realize it is highly unlikely their sick child has it.

**Expect potential difficulties with testing.**

24. For COVID-19, symptoms can begin two to 14 days after exposure, but most begin five to seven days after it.
25. However, as with diseases like measles, you can start spreading the virus two days before you begin to feel sick. So if you think you might have been exposed, it is very important to warn others and isolate yourself from them as soon as you can, especially if they are older or medically fragile.
26. It is an axiom of general medicine that when one disease is sweeping through an area and a patient has its symptoms, it is usually safe to assume that's what the patient has and begin treating it, rather than waiting for test results. So unless both the flu and the coronavirus begin circulating heavily at the same time in your city, do not be surprised if your doctor does not recommend a test.
27. And getting tested for the coronavirus can be tricky, especially with so many test delays. The PCR type is more accurate than 15-minute "rapid antigen tests," but it can take hours or even days to return results, depending on whether it has to be sent away to a central lab.
28. One positive test probably means you are infected, but one negative test should not be trusted; too many things can go wrong. Two negative PCR tests taken at least 24 hours apart are a better indication of whether you are infection-free.
29. If your insurance company will pay for only one test, you might consider paying for the second one yourself for the peace of mind.

## TOPIC 35. FARM BILLS

### The story so far:

1. Farmers have taken to streets, protesting 3 Bills on agriculture market reforms that were passed by Parliament last week and will become laws once they are signed by President. In Punjab and Haryana, bandhs were observed, with blocked roads and mass rallies. Opposition parties and farmers groups across political spectrum have expressed concern that laws could corporatise agriculture, threaten current mandi network and State revenues and dilute system of government procurement at guaranteed prices.

### What are the three Bills?

2. The Bills which aim to change the way agricultural produce is marketed, sold and stored across the country were initially issued in the form of ordinances in June. They were then passed by voice-vote in both the Lok Sabha and the Rajya Sabha during the delayed monsoon session this month, despite vociferous Opposition protest.
  - a. The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020, allows farmers to sell their harvest outside notified Agricultural Produce Market Committee (APMC) mandis without paying any State taxes or fees.
  - b. The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Bill, 2020, facilitates contract farming and direct marketing.
  - c. The Essential Commodities (Amendment) Bill, 2020, deregulates the production, storage, movement and sale of several major foodstuffs, including cereals, pulses, edible oils and onion, except in the case of extraordinary circumstances.
3. Government hopes new laws will provide farmers with more choice, with competition leading to better prices, as well as ushering in a surge of private investment in agricultural marketing, processing and infrastructure.

### Will farmers get minimum support price?

4. Most of the slogans at the farmers' protests revolve around the need to protect MSPs, or minimum support prices, which they feel are threatened by the new laws. These are the pre-set rates at which the Central government purchases produce from farmers, regardless of market rates, and are declared for 23 crops at the beginning of each sowing season.
5. However, the Centre only purchases paddy, wheat and select pulses in large quantities, and only 6% of farmers actually sell their crops at MSP rates, according to the 2015 Shanta Kumar Committee's report using National Sample Survey data. None of the laws directly impinges upon the MSP regime.
6. However, most government procurement centres in Punjab, Haryana and a few other States are located within the notified APMC mandis.
7. Farmers fear that encouraging tax-free private trade outside the APMC mandis will make these notified markets unviable, which could lead to a reduction in government procurement itself. Farmers are also demanding that MSPs be made universal, within mandis and outside, so that all buyers — government or private — will have to use these rates as a floor price below which sales cannot be made.

### Why are protests vociferous in some States?

8. More than half of all government procurement of wheat and paddy in the last five years has taken place in Punjab and Haryana, according to Agriculture Ministry data.
9. More than 85% of wheat and paddy grown in Punjab, and 75% in Haryana, is bought by the government at MSP rates. Farmers in these States fear that without MSPs, market prices will fall.
10. These States are also most invested in the APMC system, with a strong mandi network, a well-oiled system of arthiyas or commission agents facilitating procurement, and link roads connecting most villages to the notified markets and allowing farmers to easily bring their produce for procurement.
11. The Punjab government charges a 6% mandi tax (along with a 2.5% fee for handling central procurement) and earns an annual revenue of about ₹3,500 crore from these charges.

### What are some other concerns?

12. One of the major concerns raised by regional political parties and non-BJP State governments is that agriculture falls in the State list, arguing that the Centre should not be making legislation on this subject at all.
13. They are concerned about the loss of revenue from mandi taxes and fees, which currently range from 8.5% in Punjab to less than 1% in some States.
14. Some economists and activists say both Punjab and Rajasthan are considering legal measures to expand the bounds of their APMC mandi yards to ensure that they can continue collecting taxes on all agricultural trade within their State's borders.

15. States such as Chhattisgarh and Odisha have only seen procurement increase over the last five years, after the implementation of decentralised procurement. Paddy farming has received a major boost with procurement at MSPs and farmers fear their newly assured incomes are at stake.
16. The majority of agricultural marketing already happens outside the mandi network, with only 7,000 APMC markets operating across the country. Bihar, Kerala and Manipur do not follow the APMC system at all. However, most private buyers are currently small traders at local mandis.
17. The removal of stock limits and facilitation of bulk purchase and storage through the amendment to the Essential Commodities Act could bring large corporate players into the agriculture space.
18. Although they will bring much-needed investment, they could also skew the playing field, with small farmers unlikely to match them in bargaining power.

CIVILSIAS

## TOPIC 36. MINIMUM SUPPORT PRICE (MSP)

1. The recently enacted law that dismantles the monopoly of APMC (agricultural produce market committee) mandis, thereby allowing sale and purchase of crops outside these state government-regulated market yards, may not have faced serious farmer opposition had it included a provision safeguarding the continuance of the existing minimum support price (MSP)-based procurement regime.
2. A mere sentence, to the effect that nothing in this Act shall stop the government from announcing MSPs and undertaking crop purchases at these rates as before, might have blunted any criticism of the new law being “anti-farmer”.

### What does the law say about MSP?

3. The Farmers’ Produce Trade and Commerce (Promotion and Facilitation) Bill does not give any statutory backing to MSP. Forget making it a legal right, there isn’t even a mention of either “MSP” or “procurement” in the Bill passed by both Houses of Parliament last week.
4. Agriculture Minister Narendra Singh Tomar has said the new legislation has **“nothing to do with MSP”**. Instead, its objective is simply to grant farmers and traders the freedom of choice to sell and buy agricultural produce outside the premises of APMC mandis. MSP and procurement, according to him, are entirely separate issues: “MSP was not part of any law before. Nor is it part of any law today.”

EXPRESS  
**explained.**



### WHAT'S MSP

It is a **“minimum price”** for any crop that the government considers as remunerative for farmers and hence deserving of **“support”**. It’s also the price that government agencies pay whenever they procure the particular crop. The government now fixes MSPs for 23 crops, but is NOT legally bound to pay these even if open market rates for the said produce are ruling below their announced floor prices

#QUIXPLAINED

1

EXPRESS  
**explained.**

### HOW ARE MSPs DETERMINED?

The Centre fixes MSPs for every kharif and rabi cropping season based on recommendations of the Commission for Agricultural Costs and Prices (CACP)

● When a farmer grows a crop, he incurs costs, some of it explicit and some implicit or unpaid. The CACP considers the following costs:

1

**A2**

Covers all cash and in kind expenses incurred by farmers on seeds, fertilisers, chemicals, hired labour, fuel, irrigation, etc

2

**A2+FL**

Actual costs plus an imputed value of unpaid family labour



3

**C2**

Includes ‘A2+FL’ along with revenues forgone on owned land (rent) and fixed capital assets (interest)

#QUIXPLAINED

2

5. The minister isn’t wrong.
6. National Food Security Act, 2013 (NFSA), passed by previous Congress-led UPA government, provides a legal basis for public distribution system (PDS) that earlier operated only as a regular government scheme. NFSA made access to PDS a right, entitling every person belonging to a “priority household” to receive 5 kg of foodgrains per month at a subsidised price not exceeding Rs 2/kg for wheat and Rs 3/kg for rice. Priority households were further defined to cover up to 75% of country’s rural population and 50% in urban areas.
7. MSP, by contrast, is devoid of any legal backing. Access to it, unlike subsidised grains through PDS, isn’t an entitlement for farmers. They cannot demand it as a matter of right.

### What is the basis of MSP then?

8. “It is only a government policy that is part of administrative decision-making. The government declares MSPs for crops, but there’s no law mandating their implementation,” explained Abhijit Sen, former Planning Commission member and chairman of the Commission for Agricultural Costs & Prices (CACP).

9. The Centre currently fixes MSPs for 23 farm commodities — 7 cereals (paddy, wheat, maize, bajra, jowar, ragi and barley), 5 pulses (chana, arhar/tur, urad, moong and masur), 7 oilseeds (rapeseed-mustard, groundnut, soyabean, sunflower, sesamum, safflower and nigerseed) and 4 commercial crops (cotton, sugarcane, copra and raw jute) — based on the CACP's recommendations.
10. But the CACP itself is not any statutory body set up through an Act of Parliament. This, despite its coming to existence in 1965 and MSPs being announced since the time of the Green Revolution, starting with wheat in 1966-67. The CACP, as its website states, is just "an attached office of the Ministry of Agriculture and Farmers Welfare, Government of India". It can recommend MSPs, but the decision on fixing (or even not fixing) and enforcement rests finally with the government.
11. "The government can procure at the MSPs if it wants to. There is no legal compulsion. Nor can it force others (private traders, organised retailers, processors or exporters) to pay," Sen noted. The government does buy wheat and paddy at their MSPs. But that's more out of political compulsion and the need to supply the PDS's foodgrain requirements, more so post the NFSA.

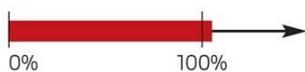


TAKE THIS YEAR'S WHEAT, FOR INSTANCE  
MSP announced:

**₹1,975 per quintal**

at A2+FL cost of ₹960

So, that's a profit of  
**₹1,015/quintal**  
for the farmer



or a **105.7%**  
return over 'A2+FL'.



But when calculated  
against the more  
comprehensive C2 cost of  
₹1,467/quintal, it's only a  
**34.6%** gain



## A BIT OF THE PAST

MSP was introduced in the mid-sixties when India was food-deficit. The government was keen to boost domestic production through Green Revolution technologies, but realised farmers wouldn't plant input-intensive high-yielding wheat or paddy varieties unless guaranteed a minimum price

MSP WAS FIRST FIXED FOR WHEAT  
IN 1966-67 AT

**₹54/quintal**



#QUIXPLAINED

4

12. The only crop where MSP payment has some statutory element is sugarcane. This is due to its pricing being governed by the Sugarcane (Control) Order, 1966 issued under **the Essential Commodities Act**. That order, in turn, provides for the fixation of a 'fair and remunerative price' (FRP) for cane during every sugar year (October-September). But even the FRP — which, incidentally, was until 2008-09 called the 'statutory minimum price' or SMP — is payable not by the government. The responsibility to make FRP payment to farmers within 14 days of cane purchase lies solely with the sugar mills.

### Has there been any move to give MSP legislative backing?

13. The CACP, in its price policy report for the 2018-19 kharif marketing season, had suggested enactment of a legislation conferring on farmers 'The Right to Sell at MSP'. This, it felt, was necessary "to instil confidence among farmers for procurement of their produce". That advice, predictably, wasn't accepted.
14. The **ongoing farmer protests** essentially reflect a loss of that very confidence. Is the dismantling of the monopoly of APMC mandis in wholesale trading of farm produce the first step at ending even the present MSP-based procurement programme, largely limited to wheat and paddy? If APMCs were to turn unviable due to the trades moving outside, how will government agencies undertake procurement that now takes place in mandis?
15. These questions are playing in the minds of farmers, particularly in states such as Punjab, Haryana and MP that have well-established systems of governmental MSP purchases. For them, freedom to sell to anyone, anywhere and anytime has little value compared to the comfort of assured procurement at MSP.

### What has the government done to address these questions?

16. Prime Minister Narendra Modi, on September 20, tweeted that the “system of MSP will remain” and “government procurement will continue”. The Agriculture Minister, too, has pointed out that past governments never thought it necessary to introduce a law for MSP. So why even talk about MSP, leave alone incorporate guarantees relating to its continuance, in an apparently unrelated law?



## HOW EFFECTIVE IS MSP NOW?

MSP is only as good as its implementation, especially with India turning food-surplus and crop prices tending to fall more than rise. Though government announces MSP for 23 crops, it effectively procures only a third of these

### GOVERNMENT PROCUREMENT VS. PRODUCTION (MILLION TONNES)\*

	PROCUREMENT	PRODUCTION	% PROCURED
Rice	51.23	118.43	43.26
Wheat	38.99	107.59	36.24
Cotton	104.62*	354.50*	29.51
Chana	2.1	11.35	18.47
Arhar/Tur	0.72	3.83	18.8
Moong	0.14	2.46	5.69
Mustard	0.8	9.12	8.78
Groundnut	0.71	10.1	7.03

\*Lakh bales of 170 kg each; Data for 2019-20

TEXT: HARISH DAMODARAN; GRAPHIC: MITHUN CHAKRABORTY

#QUIXPLAINED

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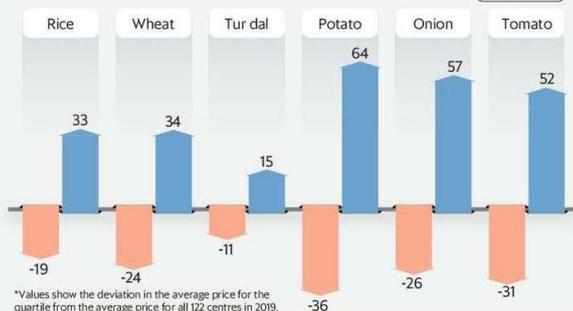
17. It remains to be seen whether these finer points would go down well on ground. By announcing MSPs of rabi crops for the ensuing planting season on September 21 (this was last year done on October 23) and kickstarting kharif procurement from early next month, the government may hope to counter any major farmer backlash.

## TOPIC 37. FARM PRICES

### MINT GRAPHITI

**Chart 1**  
Prices of agricultural products show wide variation across the 122 centres studied

Price deviation from overall average (in %) \*



\*Values show the deviation in the average price for the quartile from the average price for all 122 centres in 2019.

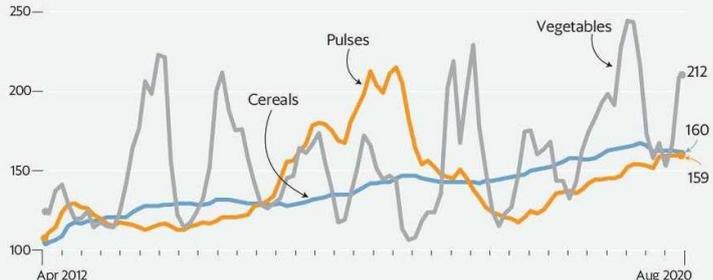
**Chart 2**  
Wholesale prices are higher in the north-east and south zones

Price deviation from overall average for 122 centres in 2019 (in %)

	Rice	Wheat	Tur dal	Potato	Onion	Tomato
North zone	-9	-19	-2	-20	-5	1
West zone	-9	-7	-4	-11	-17	-16
East zone	-6	-6	-1	-25	-1	10
North-east zone	10	20	6	16	28	55
South zone	19	23	5	44	14	-9

**Chart 3**  
Prices of vegetables are far more volatile than those of cereals and pulses

Wholesale Price Index (WPI)



Source: Price monitoring division of the ministry of consumer affairs, food and public distribution, office of the economic adviser, ministry of commerce and industry

- On 26 September, government procurement of food crops started, five days in advance, following the enactment of three farm bills. Under the new policy regime, farmers can sell their produce to whoever they want, and need not do so through designated markets.
- The same week, reports emerged that farmers from Uttar Pradesh wanting to sell their produce in Karnal, Haryana, were stopped at the state border. Later, the Haryana government clarified there was no law barring farmers from other states from selling their produce in Haryana, and they could do so after registering on a portal. This begs the question, why would farmers from one region want to sell their produce elsewhere?
- Monthly data collected on wholesale prices across 122 centres by the ministry of consumer affairs, food and public distribution, shows wide geographical disparity in prices. We studied this data for six key agri commodities in 2019, covering foodgrain, pulses and vegetables. Three commodities—rice, wheat and tur dal—were among the 23 for which the government sets a minimum support price (MSP). The other three—potato, onion and tomato—did not have MSP support. The largest price variation was seen for vegetables, where trade is mostly unregulated and there is no government procurement.
- What is the reason for this wide geographical disparity in prices? Under the current policy regime, agricultural markets are the domain of state governments. All states that have notified the Agricultural Produce Marketing Committee (APMC) Act operate APMC *mandis* (markets) with specified geographical jurisdictions. Farmers are, therefore, required to sell their produce via auctions to licensed traders at the *mandi* in their region.
- Most major states have implemented the APMC Act, with Kerala and Bihar being notable exceptions. However, there is large variation across states in terms of the scope and stringency of these APMC acts, wrote Sudha Narayanan, associate professor at the Indira Gandhi Institute of Development Research, in an article published by The India Forum. Such variations have led to fragmented markets and impeded the emergence of a single national market.
- In rice, for instance, monthly average price in 2019 ranged from ₹2,042 per quintal in Agra (UP) to ₹5,102 in Gangtok (Sikkim). In vegetables, variation is much greater. In tomatoes, for instance, the monthly average price in 2019 ranged from ₹985 per quintal in Udaipur (Rajasthan) to ₹7,605 in Mayabunder (Andaman & Nicobar).
- These prices offer an insight into the wide disparity in what farmers earn for their produce in different parts of the country. A quartile-wise distribution shows that in all six commodities, there is a sizeable number of centres where the wholesale prices vary sharply. In rice, for example, the average price in the bottom quartile comprising close to 30 centres was 19% below the average for the 122 centres. In the top quartile, the average price was 33% higher. This variance in vegetables is much higher (*see chart 1*).
- The difference in wholesale prices is also driven by transaction costs such as for transportation and the relative demand and supply across regions. With agri production largely concentrated in the north and west, wholesale prices are relatively higher in other regions, which are net consumers of these products (*see chart 2*).

9. Yet, inter-state barriers do seem to play a role in driving up the price wedge across regions. An estimate by Shoumitro Chatterjee, a researcher at Princeton University, suggests that removal of inter-state barriers can increase prices accruing to farmers by up to 11%. His paper describes how restrictions on inter-state trade undermine market power and, therefore, prices accruing to farmers.
10. In an emailed response, Narayanan explained how geographical disparities in prices can indicate the presence of barriers to trade as well as high transaction costs that can aggravate these disparities. “In general, we would expect large disparities in prices to be arbitrated away by the free movement of produce to the point where any disparity is on account of just the transaction cost associated with moving the produce,” she said.
11. Price variation is greatest in the case of vegetables. The absence of MSP in vegetables means they lack a price floor. As vegetables are mostly perishable, the lack of efficient storage and distribution networks inhibits long-distance trade, and markets for vegetables remain largely localized. So, their prices are volatile, being prone to supply and demand shocks (*see chart 3*).
12. The full implication of the new farm policy regime is difficult to predict. In the absence of regulation, market forces will dictate that buyers will procure from farmers in regions where prices are low. Farmers in regions that have a relative cost disadvantage might lose out.
13. On the flip side, barrier-free trade and more supply chain investments can increase earnings for farmers. With the new farm bills, how this plays out will be keenly watched.

## TOPIC 38. FARM REFORMS

1. Words like 'choice' and 'freedom' are alien to Santosh Kumar. As a young farmer from Araria in Bihar, Kumar has always seen petty traders pick up the harvest from the farm-gate. Prices of maize, wheat and rice are usually fixed by a few local middlemen. So, when the federal government enacted a new set of laws to free farmers from the shackles of regulated markets and unscrupulous traders, Kumar could not help but reflect what this freedom meant for him.
2. Bihar abolished the much-maligned Agriculture Produce Market Committee or APMC Act way back in 2006 when he was barely 14 years old. But that did not translate into private buyers lining up to purchase the produce.
3. For instance, in about two weeks from now, farmers in Kumar's village will be harvesting their paddy. And the middlemen have arrived—farmers who need money urgently are pledging the crop for ₹1,100 per quintal. The 'free market' is offering Kumar ₹768 less per quintal compared to the minimum support price (MSP) announced by the central government (₹1868 per quintal).
4. Fact is, the market price does not even cover the costs of growing paddy—₹1,245 per quintal—as calculated by the commission for agricultural costs and prices.
5. Small farmers like Kumar are price-takers in this 'free market' with little or no bargaining power. "Most of the farmers here do not even know what support prices are. They have no idea that a farmer in Punjab is selling the same paddy at 70% higher prices," Kumar said.
6. "I can understand why farmers in Punjab and Haryana are out on the streets protesting... in one season I have lost more than ₹1.6 lakh in just one harvest of maize (sold at a 60% discount to MSP). Freedom has actually meant a free fall for us... and every year, we keep selling our land bit by bit to cover expenses of a marriage or repay debts."
7. On Sunday, the President signed off on three farm reform bills that were passed by the Parliament earlier in a chaotic sitting. As of now, it remains unclear how these structural reforms—which Prime Minister Narendra Modi described as a 'watershed' moment—will play out on the ground. Will competitive markets lead to better prices? Will the roll-out be smooth if states are not on board? How long will it take food companies to invest in private markets and value chains? And, can farmer protests put a spanner on the reforms path?
8. Last Friday, farmers across states came out on the streets protesting the laws. They fear that by leaving them to market forces and large corporate buyers, the government will gradually withdraw from procurement at support prices. Understandably, the protests were loudest in Punjab and Haryana, where most farmers depend on the government to sell their grains at support prices.
9. Farmers also fear that a dual regime—4-8% taxes and fees inside regulated markets and zero taxes outside—will prompt traders to move outside APMCs. As the Bihar experience shows, free markets, without regulatory oversight and monitoring might worsen their suffering.
10. It's unfortunate that the debate has turned political and opinions are sharply polarised, said T Nanda Kumar, former agriculture secretary to the federal government. "The problem is compounded by the trust deficit faced by farmers. To get private players to participate in trade and meet farmers' expectations will be a challenge. Do organised players have the resources to mop up the large marketable surplus produced by farmers? Or is it more likely that the small trader will run the show (outside mandis) leading to a Bihar-like situation?"

### The states

11. The most contentious among the three laws is the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020, which seeks to create a barrier-free trade regime where farmers are free to sell their produce to any buyer minus any taxes and fees. Currently, a chunk of the trade is routed through regulated mandis or APMCs where licensed trader cartels often collude to keep prices low.
12. The government hopes by opening up trade to competition, farmers will have a greater choice of buyers and receive better prices. The other law allows farmers to enter into contracts with businesses at assured prices; the third one, an amendment to the decades old Essential Commodities Act removed the power of the government to impose arbitrary stock limits on grains and pulses. The government expects this to spur investment in storage, transport and value addition.
13. The fact that the laws were brought in as ordinances in the middle of a pandemic with little or no consultation with state governments will likely delay their implementation. It will also rekindle the debate on cooperative federalism and the centre usurping regulatory powers of the state governments.
14. Also, corporates may shy away from investing in infrastructure facilities like private mandis and value chains if states are on the warpath. Since critical elements like trade related dispute resolution (to be decided by local

magistrates) are in the states' domain under the new law, the roll out will be anything but smooth if states are not on board.

15. On Monday, after months of dogged opposition to the new bills, the Punjab Chief Minister Amarinder Singh sat on a protest demonstration even as a tractor was burnt in the national capital by Congress party workers. Meanwhile the state is considering options on how to block the reforms.
16. One, it is mulling the feasibility of bringing the entire state under the purview of the APMC Act, since the new law is only applicable outside the geographical boundary of a state-regulated market yard. The other option is to challenge the constitutional validity of the laws as agriculture and agriculture marketing are the exclusive domain of state legislatures, according to the constitution.
17. States like Chhattisgarh and Kerala are considering these options and as farmer protests gain ground more opposition-ruled states like West Bengal and Telangana might follow. As of now, Rajasthan, ruled by the opposition Congress party has notified all registered warehouses, including those operated by the Food Corporation of India, under the state APMC Act. On Wednesday, the Maharashtra government withdrew an earlier order to implement the laws in the state.
18. To cool down tempers of Punjab and Haryana farmers who fear the new laws are designed to hit MSP-based procurement in the long run, the centre has begun procuring kharif crops (mostly paddy) from farmers, a week ahead of schedule.
19. But interestingly, it chose not to shake up the existing system. So the Food Corporation of India is procuring grains in Punjab after paying 8.5% in taxes and mandi fees using the services of commission agents who the centre blamed were misguiding farmers. It's ironic: the government is urging private players to purchase directly from farmers but carrying out its own procurement from inside mandis.
20. For now, the battle lines are sharply drawn. On Tuesday, Prime Minister Narendra Modi launched another scathing attack on opposition parties, a day after Congress leader Sonia Gandhi urged states ruled by her party to block the reforms. "They want middlemen to prosper... so they are spreading confusion. They are unable to tolerate the freedom we gave farmers," Modi said.

#### **The corporates**

21. The reforms have been lauded by companies with a stake in the agriculture economy. The freedom to purchase and trade without any restrictions will benefit the likes of ITC Limited, Cargill India, Adani Wilmar and Reliance Retail, among others, who are likely to invest in the long run.
22. According to Simon George, president of Cargill India, the reforms will go a long way in creating modern value chains and integrating farmers with global markets. "By focusing on MSP, we have blinded ourselves to opportunities elsewhere. As a company we are awaiting the fine print and evaluating the overall climate and how states embrace these reforms. The process may take between 24-36 months to show results on ground."
23. "For years, private traders have been blamed for hoarding and manipulating prices but now farmers are asked to trust them," said the former head of a large food company who did not want to be named. He added that businesses will have to invest to build back trust and it will take for the reforms to work.
24. For now, businesses will keenly watch the volume of trade which shifts out of regulated markets to take advantage of the tax-free regime.
25. "We are expecting at least 20% of mandi arrivals to shift outside during the kharif harvest season (beginning October). Competition will ensure that farmers will not lose out since large food processors can offer them a better price by cutting down on intermediaries," said Amith Agarwal, CEO of Star AgriBazaar which runs an online platform for trading of farm produce. Agarwal is expecting trade volumes on the electronic platform to grow five-fold in the current financial year to ₹20,000 crore.
26. However, the optimism may take time to result in fresh investments in post-harvest infrastructure. With several states on a warpath on the reform bills, businesses will wait and watch. More so, since consumer demand is depressed due to the ongoing pandemic and income-hit households are unlikely to shift to packaged groceries. The limited share of processed food (only about 7% food items are processed) in the consumption basket and the minuscule size of organised retail in India also puts a limit to the volumes food companies can procure from farmers.
27. "Businesses will wait before the government frames rules and definitions. Setting up even a small private market yard needs significant investment and no one will jump in immediately," said a consultant working in the food processing sector on condition of anonymity.

#### **The farms**

28. The extent to which farmer unions oppose the bills will also determine its roll out. It was largely due to the farmer protests that the ruling Bharatiya Janata Party lost its oldest ally, the Shiromani Akali Dal from Punjab. In

Haryana, farmer organisations have urged BJP's junior partner and Jannayak Janata Party leader Dushyant Chautala to oppose the bills and resign from the post of deputy chief minister of the state.

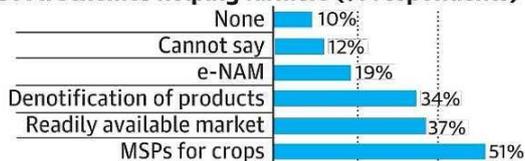
29. Beyond the political ramifications, price movements in the ongoing Kharif (monsoon) harvest season will be a key factor. Internally, farmer organisations are planning to put the government on the mat on the issue of honouring support prices—especially since the Prime Minister has promised farmers that the new trade regime will not weaken the state procurement system.
30. October could be a trying month for the government if market prices collapse on the back of record food production, estimated at 145 million tonnes.
31. Going by initial price trends, several crops like maize, paddy, cotton, soybean, and bajra are selling at a significant discount to MSP. Other than paddy (the main Kharif harvest), the centre has so far allowed states to undertake MSP-based purchase of 1.4 million tonnes of pulses, about 15% of the estimated production. The procurement volumes are likely to be revised upwards.
32. On Tuesday, the All India Kisan Sangharsh Coordination Committee (AIKSCC), a coalition of over 250 farmer unions across the country, announced another round of agitation beginning 2 October with a call to march to the nation capital in end November. "Farmers will take a pledge to socially boycott political parties which have not opposed these reforms and we will urge state assemblies to adopt resolutions to not implement these laws," said Avik Saha, general secretary of AIKSCC.
33. For now, Punjab farmers have upped the ante. They have decided to block railway tracks indefinitely, pass resolutions in village councils against the bills, and protest outside retail outlets and warehouses run by large businesses. The course of the new laws, however, will be determined by the spill-over effect of these protests in other states.

## Ignored priorities

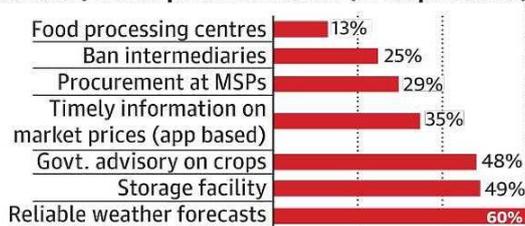
Only 6% of agricultural households in India sell\* their produce at the Minimum Support Price (MSP), latest available data show. Then, why has MSP become a contentious issue? Two surveys show that even in States where there was limited procurement, farmers wanted the MSP programme to continue. In fact, banning intermediaries, a key promise of the new farm laws, was not among the chief concerns of the farmers. The protests have spilled over to States such as Karnataka, Rajasthan and Tamil Nadu where procurement was relatively lower than in Haryana and Punjab. This shows that farmers fear that the laws pose an indirect threat to the MSP programme, regardless of procurement levels. By **The Hindu Data Team**

**FARMER FEEDBACK** | In a 2018 RBI survey, >50% farmers identified "MSPs for crops" as the most helpful scheme. Also, farmers prioritised reliable weather forecasts and storage facility as measures that may help in price realisation over the middlemen issue

### Govt. schemes helping farmers (% respondents)



### Measures that may help in right cropping decision/better price realisation (% respondents)



**USES OF MSP** | In a Niti Aayog study (FY08-FY11), even in States where awareness about the MSP and sale to procurement agencies were poor, an overwhelming share of farmers wanted the programme to continue. Apart from procurement, the MSP helped farmers escape exploitation even when they sold their produce to private traders

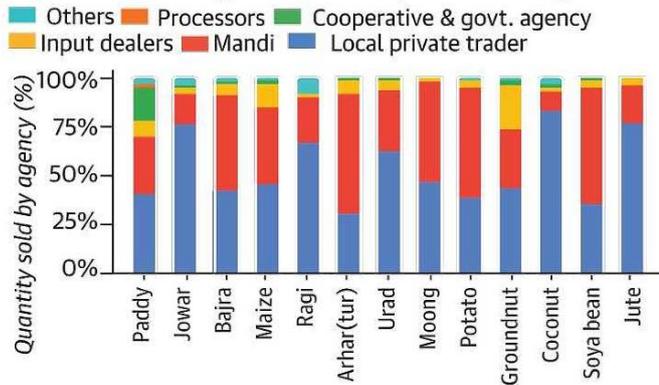
State name and the share of respondents who knew about the MSP or sold under the MSP	Reasons given for continuance of the MSP
<b>A.P.:</b> All were aware about the MSP in the selected districts of Nalgonda and Godavari	Protects farmers from exploitative practices
<b>Bihar:</b> Majority of the farmers surveyed were aware in Jehanabad (55% sold at MSP), Munger (22%) and West Champaran (5%) districts	Helps plan for the next season and improve productivity
<b>Gujarat:</b> Only 33.3% of the surveyed farmers were aware of the MSP in Rajkot and Narmada. Over 12% of the farmers in the State sold at the MSP	All in Rajkot wanted it to continue as it provides remunerative prices
<b>Karnataka:</b> In Bellary, 80% of the surveyed farmers were aware in three villages; in the fourth, only 50% knew. In Mandya, 80% were aware in three villages; in the fourth, all were aware. However, none in the State sold at the MSP	Majority of the stakeholders wanted the MSP to continue as it prevents local prices from falling too low by ensuring a minimum price
<b>Maharashtra:</b> In Yavatmal, 75% were aware of the MSP, in Latur, 33%, and in Kolhapur, 28%. Overall, close to 28% in the State sold at the MSP	56% wanted the MSP to continue as it gives an ensured price
<b>Odisha:</b> In Khurda, 57% of farmers were aware of the MSP. In Mayurbhanj, in two villages, 70% and 90% were aware. In Bargarh, all the respondents were aware. Overall, 20% in the State sold at MSP	All the respondents wanted it to continue as it saves farmers from exploitation and increases productivity
<b>Rajasthan:</b> 56% were aware in Bundi, Sri Ganganagar and Rajsamand	Most wanted it to continue as it provides protection from middlemen
<b>Tamil Nadu:</b> In Pudukottai and Tiruvarur, all farmers were aware	Everyone wanted it to continue as it stabilises market prices and acts as a floor rate so that prices offered by private dealers do not fall below the MSP
<b>U.P.:</b> In six selected districts, all the farmers were aware of the MSP. However, only 28% sold at it	The MSP ensures income security for farmers
<b>Uttarakhand:</b> In Haridwar, all farmers were aware and also sold at the MSP	It ensures marketability of produce

Source: \*2015 Shanta Kumar committee report; "Supply chain dynamics and food inflation in India", RBI study; Evaluation report on efficacy of MSP on farmers, Niti Aayog, January 2016

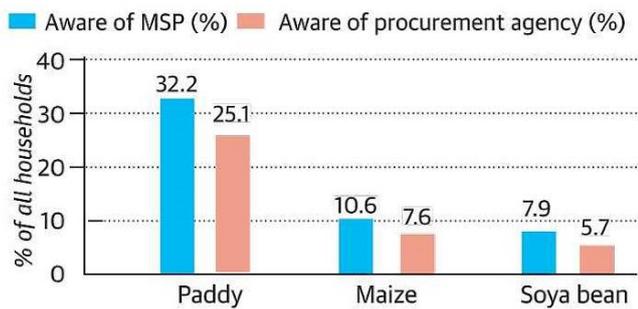
# Markets misread

One of the chief aims of The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020 is to unshackle farmers from notified markets. Prime Minister Narendra Modi said that small and marginal farmers "for the first time, have got an alternative to bargain for the price of their produce. The tradition earlier was to sell in mandis." However, latest available survey data show that most small farmers were already selling their produce to private traders. Also, a majority of them were unaware of the MSP programme. By **The Hindu Data Team**

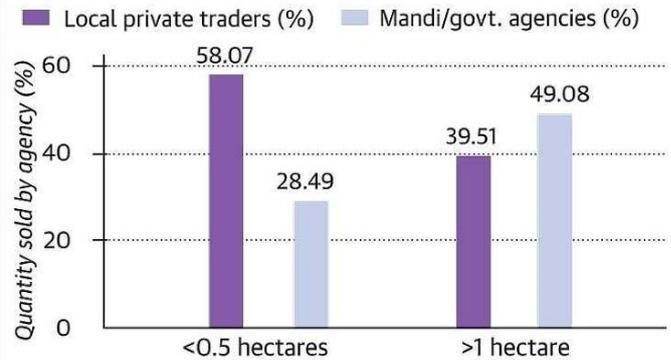
**1. NOT A PRIMARY CHOICE** | Close to 44% of produce (for 13 items in chart, combined) were sold to private traders in the July-Dec. 2012 period, 32% were sold in mandis and 12% to government and procurement agencies



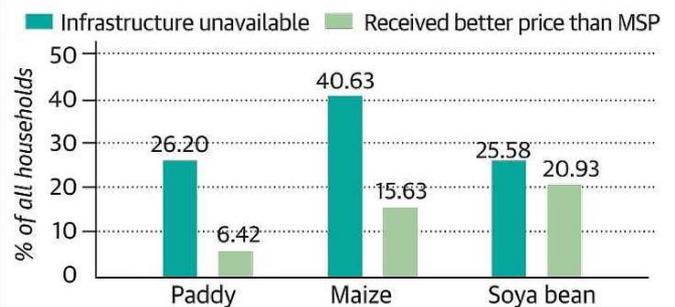
**3. CAUGHT UNAWARES** | Only 32% of households that cultivated paddy in the July-Dec. 2012 period knew about the Minimum Support Price programme and only 25% knew of procurement agencies



**2. SIZE MATTERS** | A majority of the farmers with a relatively smaller parcel of land (<0.5 ha.) sold their produce to local private traders while a higher share of big farmers (>1 ha.) took their produce to the mandis



**4. SUPPLY & DEMAND** | Among the households that were aware of the MSP programme but chose not to sell to procurement agencies, a greater share cited unavailability of infrastructure\* as the reason for not going to mandis, while some said they received better prices than the MSP



Source: National Sample Survey 70th round. | \*Procurement agency not available/ no local purchaser

**TOPIC 39. ATAL TUNNEL**

1. Prime Minister on Saturday inaugurated Atal Tunnel at Rohtang at an altitude of above 3,000 metre in Himachal Pradesh. After the inauguration, he said tunnel would provide new strength to country's border infrastructure.
2. The 9.02 km-long-tunnel, built by the Border Roads Organisation (BRO), is the world's longest highway tunnel and connects Manali to the Lahaul-Spiti Valley. It provides all-weather connectivity to landlocked valley, which remains cut-off for nearly six months in a year as Rohtang Pass is snow-bound between November and April.
3. Thanks to the tunnel, people of valley will have round-the-year road connectivity. The tunnel reduces distance between Manali and Leh by 46 km and travel time by about 4 to 5 hours. It is expected to boost tourism and winter sports in region. Tunnel, also significant from military logistics viewpoint, will provide better connectivity to armed forces in reaching Ladakh.
4. The horse-shoe shaped, single tube double lane tunnel with a roadway of 8 metre, is built through the Pir Panjal range of Himalayas, according to a government statement.
5. Its South Portal is located at a distance of 25 km from Manali at an altitude of 3,060 metre, while the North Portal is located near village Teling at Sissu in Lahaul Valley at an altitude of 3,071 metre.

**Engineering marvel** A look at some of the features of the longest highway tunnel in the world



**Proud steps:** Prime Minister Narendra Modi at the Atal Tunnel on Saturday.  
 ■ ANI

- |  |  |  |  |
|--|--|--|--|
| <ul style="list-style-type: none"> <li>▪ Length: <b>9.02 km</b></li> <li>▪ Shape: <b>Horse shoe</b></li> </ul> | <ul style="list-style-type: none"> <li>▪ Distance reduced: <b>46 km</b></li> <li>▪ Time saved: <b>5 hours</b></li> </ul> | <ul style="list-style-type: none"> <li>▪ Telephone facility: <b>Every 150 m</b></li> <li>▪ Fire hydrant: <b>Every 60 m</b></li> <li>▪ Emergency exits: <b>Every 500 m</b></li> </ul> | <ul style="list-style-type: none"> <li>▪ Turning cavern: <b>Every 2.2 km</b></li> <li>▪ Air quality monitor: <b>Every 1 km</b></li> <li>▪ Automatic incident detection system with CCTV cameras: <b>Every 250 m</b></li> </ul> |
|--|--|--|--|

Located below the Rohtang Pass, it connects Manali to Lahaul-Spiti Valley

Altitude: **3,000 m above mean sea level**  
 Single-tube, double lane tunnel  
 Maximum vehicle speed: **80 km/hr**

**2002**  
 Atal Bihari Vajpayee laid the foundation stone for the approach road to the tunnel

## TOPIC 40. INFRASTRUCTURE

### FUNDING CRUNCH

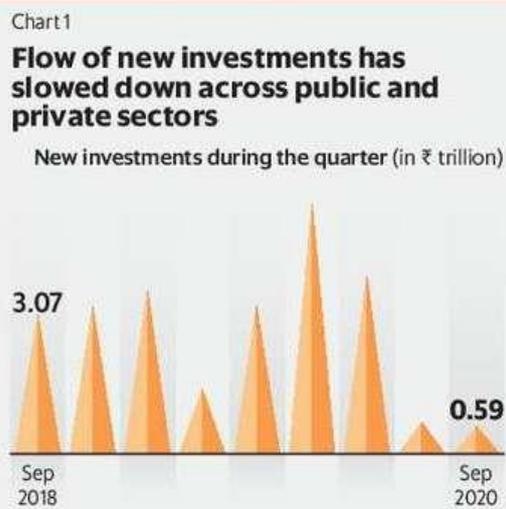
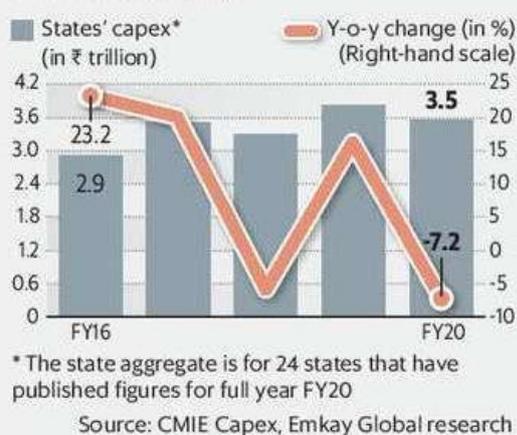


Chart 2  
**State governments typically spend twice as much as Centre on capex, but it's faltering**



1. In August, Union finance minister inaugurated India Investment Grid website, an online dashboard that lays out information on large-scale government infrastructure projects as an aid to investors, lenders and companies bidding for work. The grid is designed to give real-time updates on implementation of National Infrastructure Pipeline (NIP), the Modi government's ₹111 trillion infrastructure investment plan that runs from FY20-25.
2. Soon after the dashboard went live, Amar Kedia, an equity analyst with the brokerage firm Emkay Global, took a closer look at the projects listed under NIP. Kedia wanted to see which projects were likely to be tendered out soon, so that he could make stock recommendations accordingly. Kedia studied the top 1000 projects listed (accounting for over 80% of NIP's total value) and found that less than a fifth were even remotely close to being tendered—that is, those that would come to the market soon seeking funds from lenders and become part of the order books of construction companies.
3. Besides, the NIP's listing of projects itself is riddled with inaccuracies. *Mint* found that the same road projects have sometimes been listed more than once, adding to the total number on the list but not real projects on the ground. Some projects have been wrongly classified (e.g., Ganga Expressway road construction is listed as under implementation by Uttar Pradesh when tenders for this project are yet to be made public).
4. In other places, project costs have been inflated to meet investment targets. A road project stretching to less than 150km is listed at a project cost of ₹15,000 crore, which translates to ₹100 crore per km. In India, even after adding the cost of land acquisition, roads cost less than ₹35-40 crore a km.
5. In fact, contrary to the government's signalling on increased infrastructure investments via the NIP and the corporate world's insistence on a public spending spree to revive the economy, all signs indicate that the slowdown in government spending is going to be massive this year.
6. Last month, the Mint-Bain CEO survey polled over 100 chief executives about the business environment and two of every three executives said that the government needs to urgently triple its spending on infrastructure to jump-start economic growth.
7. But corporate India is placing its hopes on a pipedream. Data on project tenders show that on a trailing 12-month basis, government spending on infrastructure has fallen 40%. "Covid has simply accelerated this slowdown in FY21." Sectors that have reported a major decline in project tenders are roads (down 60% year-on-year), power distribution (down 52%), water supply and irrigation (down 45-50%) and railways (down 31%).
8. There are a few patchy bright spots: road projects funded by the central government are slowly getting back on track; metro rail construction; renewable power. But these segments of nascent revival are too few to carry the weight of a battered economy.
9. Data from Projects Today, an independent data repository that tracks large physical infrastructure projects and factory construction across sectors, shows that in April-June this year, new project announcements halved to 1241 (compared to 2500 in April-June 2019). Arguably, these were also the months when India had imposed one of the strictest lockdowns in the world to contain the spread of covid-19. But data for July and August, when businesses had fully resumed, shows the needle hasn't shifted by much (*see chart 1*).

10. The recent tussle between Centre and states over GST revenue sharing is only going to add to air of uncertainty. When it comes to infra spending, states usually do the heavy lifting (**see chart 2**). “This was the trend prior to the pandemic as well. There is ambiguity on what the borrowing programme will be like this year,”.
11. Ratings agency ICRA has estimated that the Centre not paying the full GST compensation may result in up to ₹3 trillion being cut in capital expenditure by the states in FY21.

### **The long-term trend**

12. India’s capex-to-revenue ratio has been structurally declining over decades (from about 45% in 1980s; 35% in 90s; 25% over 2000-10; and 22% between 2010-20). “In fact, every crisis has structurally lowered capex further as a share of government revenues,”, concluding that expectations of a counter-cyclical investment push will come to nought.
13. “India does not have fiscal space for a stimulus as current debt overhang is not transient and will last till FY25 (by estimates). India’s debt-to-revenue will exceed 5 times by FY23, a situation which was last witnessed in FY2003 when sovereign rating was junk. As a result, we estimate combined infra spending by Centre and states will decline to a 5.5% CAGR (compounded annual growth rate) over FY19-25 from 21% over FY13-19,”.
14. If the government is badly hit, then the private sector has mostly bowed out of large capital expenditure programmes this year. Spending is projected to fall 20-26% in FY21 as companies don’t want to build idle capacity when the pandemic has ruined consumer demand.
15. This leaves large public sector enterprises, which have been ordered by the central government to spend ₹4.5 trillion in capital expenditure in FY21. Media reports so far indicate that these public enterprises are reluctant to lock in their capital too, spending less than 7% of their annual budget in the first quarter of the fiscal.
16. So, what’s a viable way out of this impasse? Anil Swarup, a retired 1981 batch IAS officer and a former coal secretary, believes that a shift in focus from funding to enabling faster processes and decision-making means the low-hanging fruit of public expenditure can be plucked easily.
17. “While money is a difficulty now, there are non-financial solutions that can rev up economy. Even today, there are several projects where funds are allocated but there are delays in implementation. What no one realises is that there is a cost to every delay. So, get down to brass tacks, digitise these processes and see where the delays are happening. Make this information public. Fast-track decision-making, even if you don’t fast-track projects,”.
18. Swarup was the bureaucrat who headed the project monitoring group (PMG) under the previous UPA government. The PMG’s mandate was to revive the economy, which was in similar doldrums back in 2013.
19. By early 2013, it had been estimated that projects with investments of ₹22 trillion were logjammed. In the 15 months following his appointment, Swarup cleared 153 projects with investments of ₹5.76 trillion. “You can’t take all your decisions from Delhi,”. “The government must speak to industry and ask them what their concerns are. Improving processes won’t win you headlines, but it gets work done.” PMG was absorbed into Prime Minister’s Office. Swarup recommends putting PMG in charge again and opening its files to public scrutiny.

### **The credit freeze**

20. Adopting more transparent processes will also make lenders more confident about dealing with the infrastructure sector, partially solving the question of funding. Public sector banks burnt their fingers during the infrastructure boom that started in 2007-08, which came with new project structures, where the return profiles were difficult to chart.
21. Banks instead relied on overly optimistic GDP growth assumptions and used short-term money to lend to long-term projects. For instance, a lender to a road project expected to be fully repaid within 10 years. However, the developer had won a concession for 30 years, indicating that it took far longer than a decade to earn an adequate return on an infrastructure asset. As infra loans turned sour, banks turned the tap off.
22. For many years, ICICI Bank had been India’s largest private bank by dint of its rapidly growing corporate asset base and, till 2013, had been among India’s biggest lenders to the infrastructure sector. However, when scale of its bad loan crisis came into full view in 2016, its biggest defaulters had been in infra, construction and metals.
23. In 2017, the banking regulator placed IDBI Bank, a former development finance institution and infra lender, under its prompt corrective action framework in order to restrict high-risk commercial and project lending. Axis Bank also decided in 2017 to gradually reduce its project lending exposure. And after three decades in the business, Hemant Kanoria, chairman of West Bengal-based shadow lender Srei Infrastructure Finance told *Mint* in February (even before the pandemic hit) that his firm had almost entirely stopped lending to infrastructure, switching to equipment finance instead. “Infrastructure finance is close to our hearts and we definitely want to come back to it, but we’re waiting to see if the environment improves,” Kanoria said.
24. “Funding (for construction firms) has been a constraint for two reasons,” said Shankar Raman, whole-time director and CFO, Larsen & Toubro. “One, the financials of construction companies aren’t encouraging lenders to

step up their exposure. Unless lenders take a very benign look at some of the financial ratios of these companies, which are in deviation to standard norms, additional lending will be a challenge. On the supply side, banks are constrained because of capital adequacy norms. The capital market has gone cold too. Mutual funds did well at collecting surpluses over the last few years to finance infra and construction projects. But they've been seeing blow-up after blow-up, commencing with the ILFS fiasco."

25.Swarup's suggestions regarding greater transparency and faster processes may ease some of this hesitation to lend. A senior banker at the State Bank of India, who did not wish to be named, said: "Corporate spending has come down, so any genesis, if at all, is from the government side. Wherever there is an opportunity and a credible sponsor with manageable risks, we are lending."

26.SBI has trimmed its infra exposure to a few key sectors, such as renewable energy, roads and highways and city gas distribution. "Our learning from past is to only deal with sponsors with a track record of executing projects."

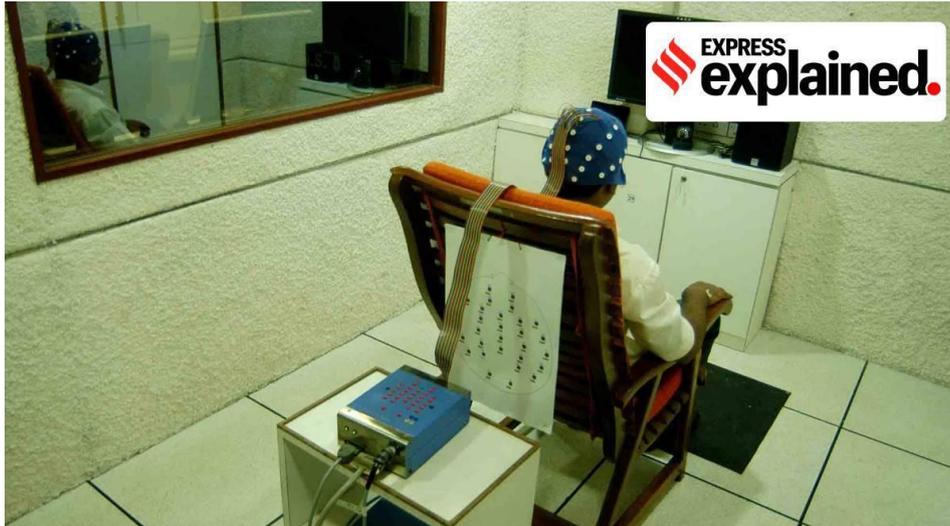
#### **The way forward**

27.Ultimately, for private lenders and private enterprises to rediscover their confidence swiftly, the government may have to make the first symbolic push. Swarup recommends redirecting funds from non-essential government spending, such as the Delhi Central Vista redevelopment project—estimated to cost ₹20,000 crore—to economically viable projects. "This will also send the right signal to the states."

28.On top of that, many economists, including so-called fiscal hawks, have come to the consensus view that fiscal deficit need not be India's guiding logic for a few years. "We need not maintain a threshold ratio for the fiscal deficit if you can get the interest rates and growth correct," Chakraborty, the economist, said.

29."If we focus too much on the deficit threshold ratios, we can't do the necessary capital and human development spending needed to boost the economy. An economic package for fire-fighting a recession is still awaited. We should let go of the 'fiscal rules' for now."

## TOPIC 41. HATHRAS CASE



1. A spokesperson for the Uttar Pradesh government said on Friday (October 2) that **polygraph and narcoanalysis tests would be conducted** as part of the investigation into the alleged gangrape and murder of a 19-year old Dalit woman by four men of the Thakur caste in Hathras last month.
2. The spokesperson said that the tests would be conducted on “all people on the accused and victim side”, apart from “police officers involved in the case and other persons related to the case”.

**What are polygraph and narcoanalysis tests?**

3. A **polygraph test** is based on the assumption that physiological responses that are triggered when a person is lying are different from what they would be otherwise.
4. Instruments like cardio-cuffs or sensitive electrodes are attached to person and variables such as blood pressure, pulse, respiration, change in sweat gland activity, blood flow, etc., are measured as questions are put to them.
5. A numerical value is assigned to each response to conclude whether person is telling truth, is deceiving or is uncertain.
6. A test such as this is said to have been first done in the 19th century by the Italian criminologist Cesare Lombroso, who used a machine to measure changes in the blood pressure of criminal suspects during interrogation. Similar devices were subsequently created by the American psychologist William Marston in 1914, and by the California police officer John Larson in 1921.
7. Narcoanalysis, by contrast, involves injection of a drug, sodium pentothal, which induces a hypnotic or sedated state in which the subject’s imagination is neutralised, and they are expected to divulge information that is true.
8. The drug, referred to as “truth serum” in this context, was used in larger doses as anaesthesia during surgery, and is said to have been used during World War II for intelligence operations.
9. More recently, investigating agencies have sought to employ these tests in investigation, and are sometimes seen as being a “softer alternative” to torture or “third degree” to extract the truth from suspects.
10. However, neither method has been proven scientifically to have a 100% success rate and remain contentious in medical field as well.

**Are Indian investigators allowed to put accused through these tests?**

11. In ‘Selvi & Ors vs State of Karnataka & Anr’ (2010), Supreme Court Bench comprising Chief Justice of India K G Balakrishnan and Justices R V Raveendran and J M Panchal ruled that no lie detector tests should be administered “except on basis of consent of accused”.
12. Those who volunteer must have access to a lawyer, and have the physical, emotional, and legal implications of the test explained to them by police and the lawyer, the Bench said.
13. It said that ‘Guidelines for Administration of Polygraph Test on an Accused’ published by National Human Rights Commission in 2000 must be strictly followed. Subject’s consent should be recorded before a judicial magistrate.
14. The results of the tests cannot be considered to be “confessions”, because those in a drugged-induced state cannot exercise a choice in answering questions that are put to them.
15. However, any information or material subsequently discovered with the help of such a voluntarily-taken test can be admitted as evidence, the court said.

16. Thus, if an accused reveals the location of a murder weapon in the course of the test, and police later find the weapon at that location, the statement of the accused will not be evidence, but the weapon will be.
17. The Bench took into consideration international norms on human rights, the right to a fair trial, and the right against self-incrimination under Article 20(3) of the Constitution.
18. "We must recognize that a forcible intrusion into a person's mental processes is also an affront to human dignity and liberty, often with grave and long-lasting consequences," the court said, observing that the state's plea that the use of such scientific techniques would reduce 'third degree' methods "is a circular line of reasoning since one form of improper behavior is sought to be replaced by another".

**Are investigators allowed to put people other than the accused in a criminal investigation — witnesses, victims, their families — through these tests?**

19. The Supreme Court had said in its order that "no individual should be forcibly subjected to any of the techniques in question, whether in the context of investigation in criminal cases or otherwise", and expanded the same rule to others who can be made to undergo the test only if they consent to it.
20. It had said that forcing an individual to undergo these tests amounts to an "unwarranted intrusion into personal liberty", but had left scope for "voluntary administration" of these techniques if the individuals gave consent.
21. The court examined the scope of Article 20(3), the right against self-incrimination, which states that no accused can be compelled to be a witness against himself.
22. It said that while this requires a person to be formally named as an accused, other provisions of the Criminal Procedure Code extend this protection to witnesses as well.
23. With reference to victims, especially of sexual offences, the Bench said that irrespective of the need to expedite the probe in such cases, a victim of an offence cannot be forced to undergo these tests as it would be "an unjustified intrusion into mental privacy and could lead to further stigma for the victim".

**In which criminal cases in recent years have these tests been used?**

24. In most cases, investigating agencies seek permission for such tests to be done on accused or suspects, but rarely on victims or witnesses.
25. Legal experts say that investigating agencies can submit to a court that the tests are being sought to help in their probe but consent or refusal to undergo the tests by an individual do not reflect innocence or guilt.
26. Most recently, the CBI has sought to conduct these tests on the driver and helper of the truck that hit the Unnao rape victim in Uttar Pradesh in July last year. It also sought to conduct the tests on one accused in the Punjab National Bank alleged fraud case, but the court rejected the plea after the accused did not give consent.
27. In May 2017, the founder of INX Media, Indrani Mukerjea, who is facing trial for the alleged murder of her daughter Sheena Bora in 2012, had offered to undergo the lie detector test, which was refused by the CBI, stating that they had sufficient evidence against her.
28. The polygraph test was also conducted on Dr Rajesh Talwar and Dr Nupur Talwar, who were accused of killing their daughter Aayushi and help Hemraj in Noida. The video of the narco analysis test on their compounder, Krishna, had been leaked.
29. The Supreme Court in its judgment had warned against such leaks, calling it a "worrisome practice".

## TOPIC 42. TRAI'S NEW TARIFF ORDER



1. In January 2020, broadcasters approached the Bombay High Court after the Telecommunications Regulatory Authority of India (TRAI) notified an amended New Regulatory Framework, which includes a New Tariff Order (NTO) for the sector. The broadcasters contended, inter alia, that because of TRAI's prescriptive channel pricing rules outlined in the NTO, they are unable to earn revenue from consumers and have to rely on advertising revenue, affecting the quality of the content they produce.
2. In the next few weeks, the Court is expected to deliver a judgment which will hopefully put an end to this issue of channel pricing. However, this case is only one of the many legal webs that tie up India's broadcasting sector.
3. "The issue before us is not the efficacy of TRAI or its regulations. It is to understand the expected role of a regulator in a sector as complex and dynamic as broadcasting," writes Uday Kumar Varma, former Secretary, Ministry of Information and Broadcasting and Ministry of MSME.
4. The broadcasting sector in India, in terms of its composition and structure, is complex by any definition. The interdependence of its constituents is deep, pervasive and to a large extent, symbiotic. There are four ways to view a programme on TV — Cable, DTH, HITS and IPTV.
5. There are at least three major actors in the supply chain — content creators, broadcasters and distribution-platform owners (DPOs), among them cable operators.
6. "The interrelationship among the constituents, whether commercial or strategic, is both dynamic and complicated," **he states**.
7. There are over 900 channels, 1,600 DPOs, four DTH operators, one HITS operator and thousands of last-mile cable operators representing a large, extensive and intricate web.
8. The legal challenges to this NTO, as well as previous challenges to regulations, demonstrate that if the regulator chooses to "manage" every aspect of the sector then the consequences will be unpredictable and disruptive.
9. "The latest NTO is well intentioned as it seeks to place an 'affordable' tariff regime. However, the practical difficulties in its implementation and a disregard for the crucial interplays within the broadcasting ecosystem nullifies this objective," **argues Varma**.
10. Regulations and policies are never static and must respond to ever-changing objectives and compulsions.
11. The question remains why TRAI is not considering approaches apart from issuing tariff orders, such as giving freedom to the industry to price their channels as per market forces.

## TOPIC 43. NATIONAL MEDICAL COMMISSION

1. National Medical Commission (NMC) has replaced Medical Council of India (BoG-MCI), as per information.
2. Dr. Suresh Chandra Sharma, former head of ENT, All India Institute of Medical Sciences (AIIMS), Delhi, has been appointed as its chairman for 3 years. Change was aimed at bringing in reforms in medical education. Govt dissolved MCI in 2018, replaced it with a BoG.
3. Indian Medical Council Act, 1956 is hereby repealed with effect from September 25. BoG appointed under section 3A of Indian Medical Council Act, 1956 (102 of 1956) in supersession of MCI constituted under sub-section (1) of section 3 of said Act shall stand dissolved,” stated gazette notification issued by MoH&FW.
4. National Medical Commission Bill, 2019 was passed by Lok Sabha on 29<sup>th</sup> July 2019. It seeks to regulate medical education and practice in India. In 2017, a similar Bill had been introduced in Lok Sabha. It was examined by the Standing Committee on Health and Family Welfare, which recommended several changes to the Bill. However, the 2017 Bill lapsed with the dissolution of the 16<sup>th</sup> Lok Sabha.

### **How is medical education and practice regulated currently?**

5. The Medical Council of India (MCI) is responsible for regulating medical education and practice. Over the years, there have been several issues with the functioning of the MCI with respect to its regulatory role, composition, allegations of corruption, and lack of accountability.
6. For example, MCI is an elected body where its members are elected by medical practitioners themselves, i.e., the regulator is elected by the regulated. Experts have recommended nomination based constitution of the MCI instead of election, and separating the regulation of medical education and medical practice. They suggested that legislative changes should be brought in to overhaul the functioning of the MCI.
7. To meet this objective, the Bill repeals the Indian Medical Council Act, 1956 and dissolves the current MCI.
8. The 2019 Bill sets up the National Medical Commission (NMC) as an umbrella regulatory body with certain other bodies under it. The NMC will subsume the MCI and will regulate medical education and practice in India. Under the Bill, states will establish their respective State Medical Councils within three years. These Councils will have a role similar to the NMC, at the state level.

### **Functions of the NMC include:**

9. laying down policies for regulating medical institutions and medical professionals,
10. assessing the requirements of human resources and infrastructure in healthcare,
11. ensuring compliance by the State Medical Councils with the regulations made under the Bill, and
12. framing guidelines for determination of fee for up to 50% of the seats in the private medical institutions.

### **Who will be a part of the NMC?**

13. The Bill replaces the MCI with the NMC, whose members will be nominated.
14. The NMC will consist of 25 members, including:
  - a. Director General of Directorate General of Health Services and the Indian Council of Medical Research,
  - b. Director of any of the AIIMS,
  - c. five members (part-time) to be elected by the registered medical practitioners, and
  - d. six members appointed on rotational basis from amongst the nominees of the states in the Medical Advisory Council.
15. Of these 25 members, at least 15 (60%) are medical practitioners. The MCI has been noted to be non-diverse and consists mostly of doctors who look out for their own self-interest over public interest.
16. In order to reduce the monopoly of doctors, it has been recommended by experts that the MCI should include diverse stakeholders such as public health experts, social scientists, and health economists.
17. For example, in the United Kingdom, the General Medical Council which is responsible for regulating medical education and practice consists of 12 medical practitioners and 12 lay members (such as community health members, administrators from local government).

### **What are the regulatory bodies being set up under the NMC?**

18. The Bill sets up four autonomous boards under the supervision of the NMC. Each board will consist of a President and four members (of which two members will be part-time), appointed by the central government (on the recommendation of a search committee).
19. These bodies are:
  - a. The Under-Graduate Medical Education Board (UGMEB) and the Post-Graduate Medical Education Board (PGMEB): These two bodies will be responsible for formulating standards, curriculum, guidelines for medical education, and granting recognition to medical qualifications at the under-graduate and post-graduate levels respectively.

- b. The Medical Assessment and Rating Board: The Board will have the power to levy monetary penalties on institutions which fail to maintain the minimum standards as laid down by the UGMEB and the PGMEB. It will also grant permissions for establishing new medical colleges, starting postgraduate courses, and increasing the number of seats in a medical college.
- c. The Ethics and Medical Registration Board: This Board will maintain a National Register of all the licensed medical practitioners in the country, and also regulate professional and medical conduct. Only those included in the Register will be allowed to practice as doctors. The Board will also maintain a register of all licensed community health providers in the country.

**How is the Bill changing the eligibility guidelines for doctors to practice medicine?**

- 20. There will be a uniform National Eligibility-cum-Entrance Test for admission to under-graduate and post-graduate super-speciality medical education in all medical institutions regulated under the Bill.
- 21. Further, the Bill introduces a common final year undergraduate examination called the National Exit Test for students graduating from medical institutions to obtain the license for practice.
- 22. This test will also serve as the basis for admission into post-graduate courses at medical institutions under this Bill. Foreign medical practitioners may be permitted temporary registration to practice in India.
- 23. However, the Bill does not specify the validity period of this license to practice. In other countries such as the United Kingdom and Australia, a license to practice needs to be periodically renewed. For example, in the UK the license has to be renewed every five years, and in Australia it has to be renewed annually.

**How will the issues of medical misconduct be addressed?**

- 24. The State Medical Council will receive complaints relating to professional or ethical misconduct against a registered medical practitioner. If the medical practitioner is aggrieved of a decision of the State Medical Council, he may appeal to the Ethics and Medical Registration Board.
- 25. If the medical practitioner is aggrieved of the decision of the Board, he can approach the NMC to appeal against the decision. It is unclear why the NMC is an appellate authority with regard to matters related to professional or ethical misconduct of medical practitioners.
- 26. It may be argued that disputes related to ethics and misconduct in medical practice may require judicial expertise. For example, in the UK, the regulator for medical education and practice – the General Medical Council (GMC) receives complaints with regard to ethical misconduct and is required to do an initial documentary investigation in the matter and then forwards the complaint to a Tribunal.
- 27. This Tribunal is a judicial body independent of the GMC. The adjudication decision and final disciplinary action is decided by the Tribunal.

**How does the Bill regulate community health providers?**

- 28. As of January 2018, the doctor to population ratio in India was 1:1655 compared to the World Health Organisation standard of 1:1000. To fill in the gaps of availability of medical professionals, the Bill provides for the NMC to grant limited license to certain mid-level practitioners called community health providers, connected with the modern medical profession to practice medicine.
- 29. These mid-level medical practitioners may prescribe specified medicines in primary and preventive healthcare. However, in any other cases, these practitioners may only prescribe medicine under the supervision of a registered medical practitioner.
- 30. This is similar to other countries where medical professionals other than doctors are allowed to prescribe allopathic medicine. For example, Nurse Practitioners in the USA provide a full range of primary, acute, and specialty health care services, including ordering and performing diagnostic tests, and prescribing medications. For this purpose, Nurse Practitioners must complete a master's or doctoral degree program, advanced clinical training, and obtain a national certification.

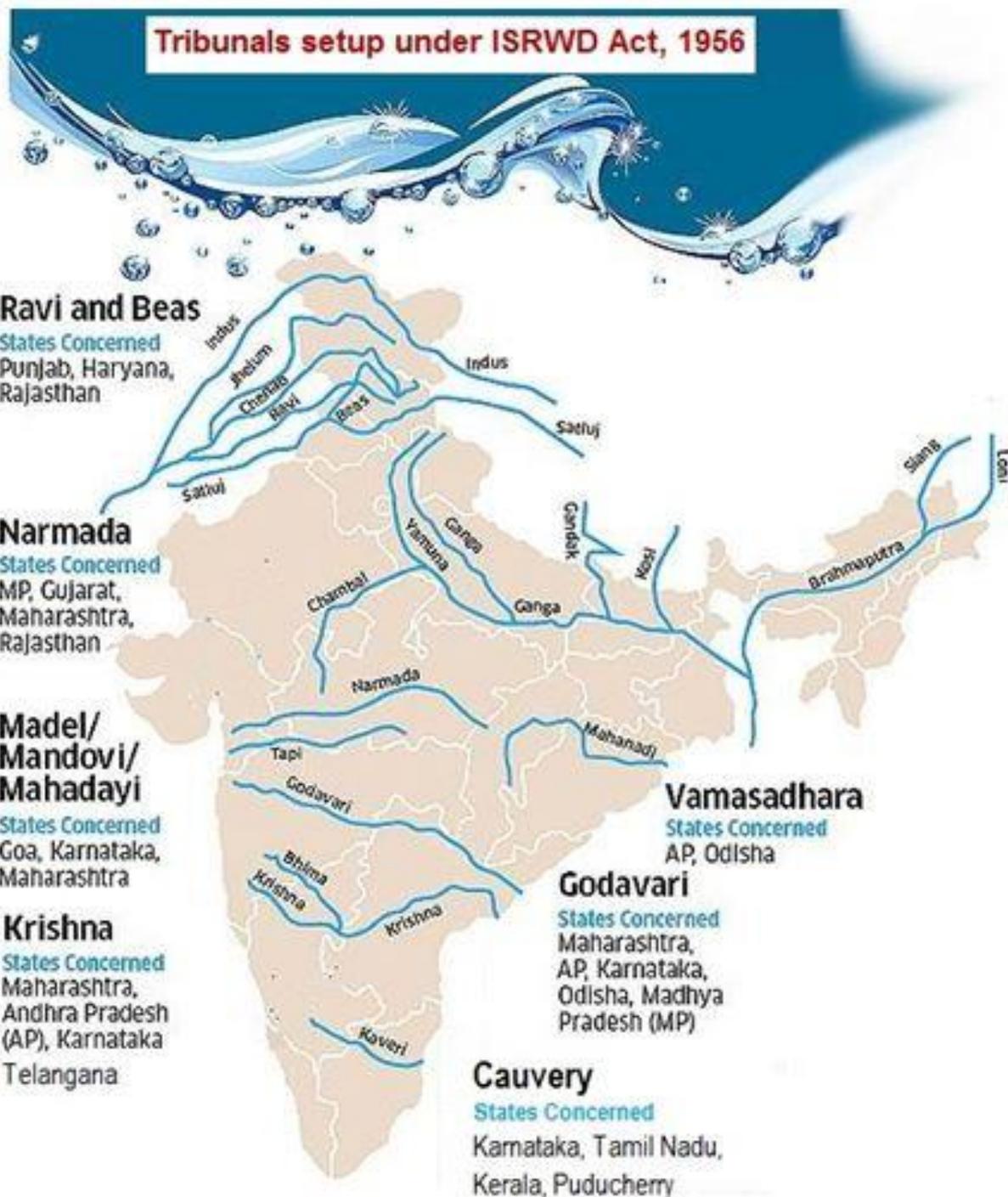
## TOPIC 44. JURISDICTION OF RIVER BOARDS

1. "Centre will determine jurisdictions of Krishna and Godavari river management boards (KRMB and GRMB) Union Water Resources Minister.
2. He was speaking after convening an apex council meeting involving Centre, Andhra Pradesh, and Telangana, second since 2016. The meeting is primarily to resolve the conflict between two States over executing irrigation projects and sharing water from the Krishna and Godavari rivers.
3. Key points on agenda at meeting which was convened via videoconference are: jurisdiction of KRMB and GRMB, submission of Detailed Project Reports (DPR) of new projects by two governments for appraisal and sanction by apex council, establishing a mechanism to determine the share of Andhra Pradesh and Telangana in the Krishna and Godavari waters, and shifting the headquarters of the Krishna River Management Board to Andhra Pradesh.
4. "Centre will go ahead with notifying jurisdiction of both KRMB & GRMB. Telangana Chief Minister dissented on this, but as per Andhra Pradesh Reorganisation Act, no consensus is needed. Both CMs agreed to submit DPRs of all projects taken up by their States. Their technical appraisal will be done in the shortest possible timeframe,".
5. The headquarters of the KRMB would be located in Andhra Pradesh.
6. With regards to sharing of river waters, the Telangana Chief Minister agreed to withdraw the case filed in Supreme Court, to allow the Centre to refer water sharing issues to the Krishna Godavari tribunal.
7. Regarding the sharing of Godavari waters, both the States were asked to send in their requests to the Centre so that it could refer them to the tribunal, a statement from the Water Resources Ministry said.
8. Andhra Pradesh CM Y.S. Jagan Reddy and his Telangana counterpart K. Chandrasekhar Rao had taken tough stands on projects such as Rayalaseema lift irrigation scheme and enhancement of carrying capacity of Pothireddypadu head regulator.

### The Inter-State River Water Disputes (Amendment) Bill, 2019

9. The Inter-State River Water Disputes (Amendment) Bill, 2019 was introduced in Lok Sabha on July 25, 2019 by the Minister of Jal Shakti, Mr. Gajendra Singh Shekhawat. It amends the Inter-State River Water Disputes Act, 1956. The Act provides for the adjudication of disputes relating to waters of inter-state rivers and river valleys.
10. Under the Act, a state government may request the central government to refer an inter-state river dispute to a Tribunal for adjudication. If the central government is of the opinion that the dispute cannot be settled through negotiations, it is required to set up a Water Disputes Tribunal for adjudication of the dispute, within a year of receiving such a complaint. The Bill seeks to replace this mechanism.
11. **Disputes Resolution Committee:** Under the Bill, when a state puts in a request regarding any water dispute, the central government will set up a Disputes Resolution Committee (DRC), to resolve the dispute amicably. The DRC will comprise of a Chairperson, and experts with at least 15 years of experience in relevant sectors, to be nominated by the central government. It will also comprise one member from each state (at Joint Secretary level), who are party to the dispute, to be nominated by the concerned state government.
12. The DRC will seek to resolve the dispute through negotiations, within one year (extendable by six months), and submit its report to the central government. If a dispute cannot be settled by the DRC, the central government will refer it to the Inter-State River Water Disputes Tribunal. Such referral must be made within three months from the receipt of the report from the DRC.
13. **Tribunal:** The central government will set up an Inter-State River Water Disputes Tribunal, for the adjudication of water disputes. This Tribunal can have multiple benches. All existing Tribunals will be dissolved, and the water disputes pending adjudication before such existing Tribunals will be transferred to the new Tribunal.
14. **Composition of the Tribunal:** The Tribunal will consist of a Chairperson, Vice-Chairperson, three judicial members, and three expert members. They will be appointed by the central government on the recommendation of a Selection Committee. Each Tribunal Bench will consist of a Chairperson or Vice-Chairperson, a judicial member, and an expert member. The central government may also appoint two experts serving in the Central Water Engineering Service as assessors to advise the Bench in its proceedings. The assessor should not be from the state which is a party to the dispute.
15. **Time frames:** Under the Act, the Tribunal must give its decision within three years, which may be extended by two years. Under the Bill, the proposed Tribunal must give its decision on the dispute within two years, which may be extended by another year.

16. Under the Act, if the matter is again referred to the Tribunal by a state for further consideration, the Tribunal must submit its report to the central government within a period of one year. This period can be extended by the central government. The Bill amends this to specify that such extension may be up to a maximum of six months.
17. **Decision of the Tribunal:** Under the Act, the decision of the Tribunal must be published by the central government in the official gazette. This decision has the same force as that of an order of the Supreme Court. The Bill removes the requirement of such publication. It adds that the decision of the Bench of the Tribunal will be final and binding on the parties involved in the dispute. The Act provided that the central government may make a scheme to give effect to the decision of the Tribunal. The Bill is making it mandatory for the central government to make such scheme.
18. **Data bank:** Under the Act, the central government maintains a data bank and information system at the national level for each river basin. The Bill provides that the central government will appoint or authorise an agency to maintain such data bank.

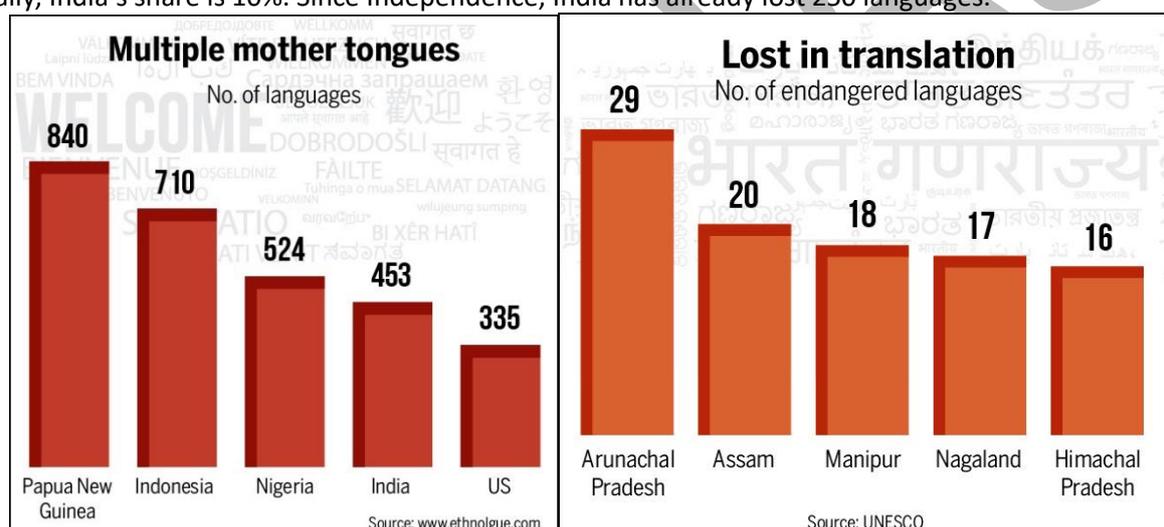


## TOPIC 45. MOTHER TONGUE

1. A child has to learn his mother tongue to gain a foundation, said Supreme Court countering Jagan Mohan Reddy-led Andhra government's logic that children, without learning English, get 'isolated'. "For foundation, it is very important that a child learns his mother tongue," Chief Justice of India remarked.
2. Andhra Pradesh government has approached Supreme Court challenging its State High Court decision to strike down a government order of November 2019 which made English medium education compulsory from classes I to VI in primary, upper primary and high schools under all managements from 2020-21. It was to be gradually extended to each further class from the consequent academic years.
3. English as medium of learning had not been imposed on children. Dalits, oppressed, find State's move a progressive measure. "Vernacular medium of education has its limits."
4. But CJI said there were "huge divergent issues" on subject that need to be extensively addressed and decided to hear it next week.
5. UNESCO, which designated February 21 as International Mother Language Day, says that every two weeks, a language disappears in the world. India, which was once home to the second largest number of languages spoken in a country, has seen several of its languages disappear.

### Languishing languages

6. From 780 languages spoken actively, India today has fewer than 500 languages spoken. According to People's Linguistic Survey of India conducted a decade back — in 2010 — 600 of these 780 languages are endangered. That means children do not learn these languages or their only speakers happen to be grandparents. Just how critical is the situation in India may be gauged from the survey's findings that of the 4,000 endangered languages globally, India's share is 10%. Since Independence, India has already lost 250 languages.



### North East is home to several endangered languages

7. According to the HRD ministry, in a reply given to the Parliament in 2014, based on data from UNESCO, 42 Indian languages are "critically endangered" — which means that "the youngest speakers are grandparents and older, and they speak the language partially and infrequently". However, there are several times that number which face the threat of extinction — called "definitely endangered", meaning that "children no longer learn the language as mother tongue in the home" and "vulnerable", which implies that while "most children speak the language, but it may be restricted to certain domains (such as home)". The worst affected is India's North East — with Arunachal Pradesh alone home to 29 endangered or vulnerable languages.

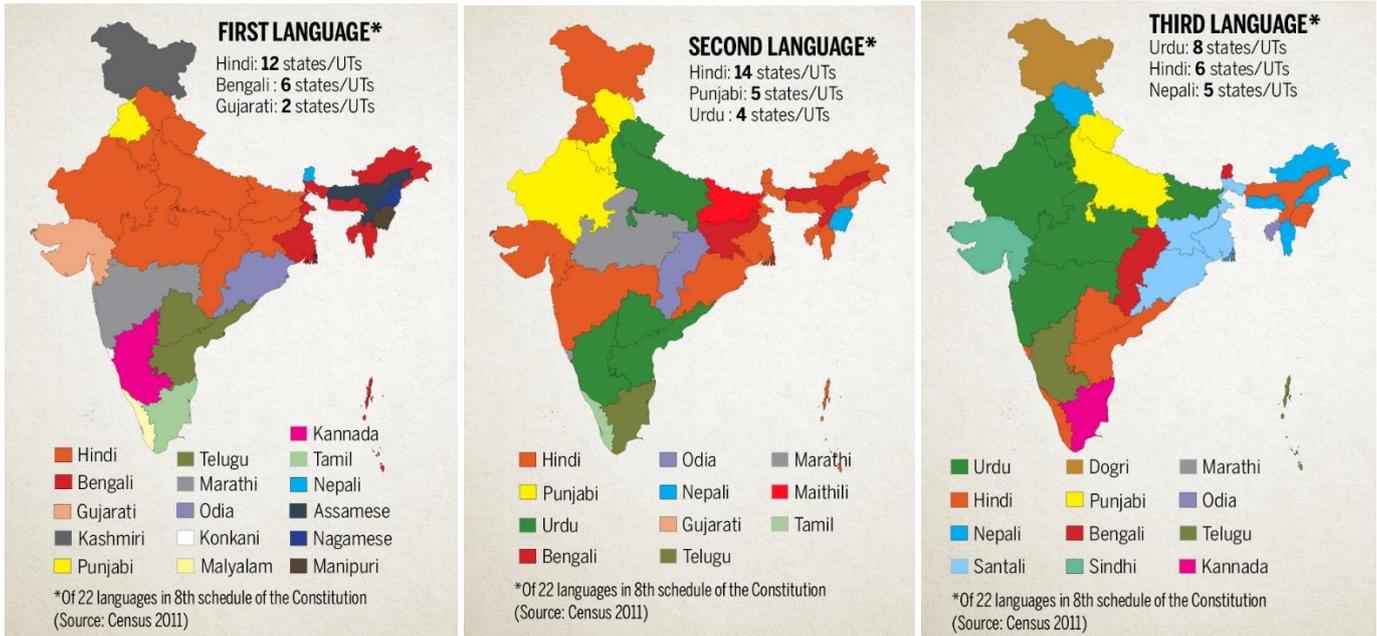
### Counting them out

8. Part of the reason why India's languages 'die' is also due to the fact that after the 1971 Census, any language spoken by fewer than 10,000 people was not included in the list of official languages — which also include the 22 official languages under the Eighth Schedule (Scheduled Languages). That, incidentally, is the highest number of official languages for any country. With the next Census due in 2021, it remains to be seen if any other languages went extinct in India — between the 2001 and 2011 Census, the number of official languages in India declined from 122 to 121.

### India is truly multilingual

9. Although several of India's languages are under threat, the country continues to have rich linguistic diversity. Most Indians speak more than one Indian language from the 22 official languages under the Eighth Schedule of the Constitution. The three language maps below show the real mix of languages across the country.

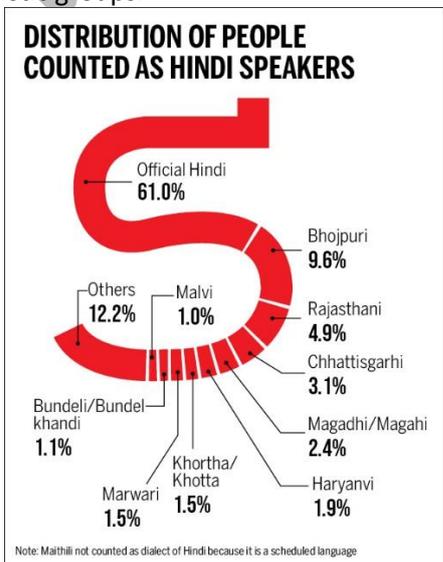
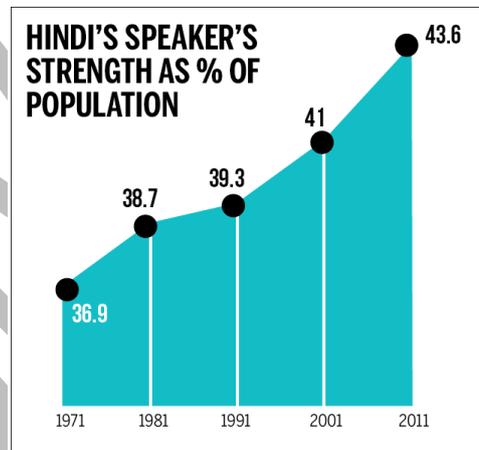
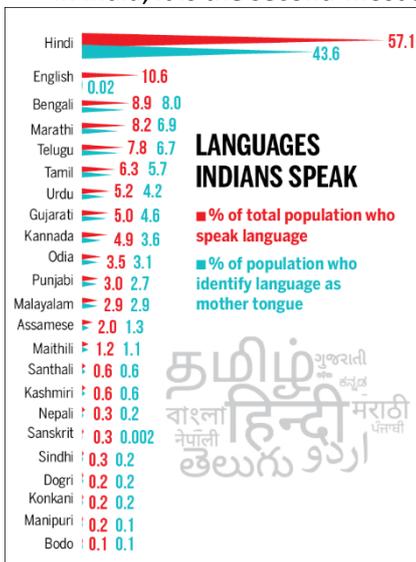
10. According to the 2011 Census data of scheduled languages (prior to Andhra Pradesh's division), more states and union territories speak Hindi as the second language (14) than first (12).



11. After Hindi, Punjabi is the most popular second language in most number of states or UTs (5), followed by Urdu (4). Urdu is the most popular third language (8). Nepali is the second language in one state (Manipur) and third language in five (Himachal Pradesh, Arunachal Pradesh, Nagaland, Mizoram and Meghalaya).

**However, it is Hindi that is spoken most widely**

12. While several languages are spoken in the country, it is Hindi that is spoken by the majority. About 57% of Indians speak Hindi, although it has many dialects. Worldwide, English remains the most-spoken language. Even in India, it is the second-most spoken language — and it cuts across linguistic groups.



**Among 22 scheduled Indian languages, Hindi grew fastest**

13. In fact, while other languages may be declining, Hindi speakers are growing. In 1971, people identifying Hindi (including dialects) as their mother tongue were 36.9% of India's total population. This increased by 6.6 percentage points to 43.6% in 2011 — highest for all scheduled Indian languages. That is about 52 crore of total of 121 crore Indians. The growth in Hindi can largely be attributed to the higher fertility rate in the Hindi belt.

**The many strands of Hindi**

14. Official Hindi, which is based on Khariboli dialect was developed in late 19<sup>th</sup> century. Many of dialects that are included in it predate language including Rajasthani and Braj as well as works of Tulsidas, Kabir & Amir Khusrow.  
 15. 61% of all native Hindi speakers say they speak official Hindi. Overall this constitutes just over a quarter of India's population (26.6%). Hindi has about 60 regional dialects.

## TOPIC 46. PUBLIC PLACES

1. Supreme Court found indefinite “occupation” of a public road by Shaheen Bagh protesters unacceptable.
2. The court said the protest, considered an iconic dissent mounted by mothers, children and senior citizens of Shaheen Bagh against the Citizenship (Amendment) Act, became inconvenient to commuters.
3. The 13-page judgment upheld the right to peaceful protest against a law but made it unequivocally clear that public ways and public spaces cannot be occupied, and that too indefinitely.
4. “Democracy and dissent go hand in hand, but then the demonstrations expressing dissent have to be in designated places alone. The present case was not even one of protests taking place in an undesignated area, but was a blockage of a public way which caused grave inconvenience to commuters,” Justice Sanjay Kishan Kaul, who authored the verdict for a three-judge Bench, observed.
5. The court suggested that the outcry may have even gone out of hand for the women protesters. It referred to reports about how women were ensconced inside a tent while a “huge periphery” of “male protesters, volunteers and bystanders”, who wanted the blockade to continue, milled around.

### ‘Out of hand’

6. While the tent occupied half the road, the other half was blocked by a 3-D map of India and even a library. Factors such as the absence of leadership and many “influencers” and groups working at cross-purposes saw the movement slip out of hand. “Thus, the protest perhaps no longer remained the sole and empowering voice of women, who also appeared to no longer have the ability to call off the protest themselves. There was also the possibility of the protesters not fully realising the ramifications of the pandemic, coupled with a general unwillingness to relocate to another site.”
7. The court noted that Shaheen Bagh seemed typical of the many digitally-fuelled “leaderless” events of dissent seen in modern times. Technology and social media could both empower and weaken mass movements.
8. “The ability to scale up quickly, for example, using digital infrastructure has empowered movements to embrace their often-leaderless aspirations and evade the usual restrictions of censorship. However, the flip side is that social media channels are often fraught with danger and can lead to the creation of highly polarised environments, which often see parallel conversations running with no constructive outcome evident,” Justice Kaul ruminated.
9. It was finally the gaining pandemic, which intervened like the “hand of God”, that led the protesters to relent and end the blockade, the court said. They were removed by the police from the site on March 24.
10. The seeds of protest and dissent were sown deep during the Freedom struggle. But dissent against the colonial rule cannot be equated with dissent in a self-ruled democracy, Justice Kaul reasoned.
11. In a democracy, the rights of free speech and peaceful protest were indeed “treasured”. They were to be encouraged and respected, the court said.

### Reasonable restrictions

12. But these rights were also subject to reasonable restrictions imposed in the interest of sovereignty, integrity and public order. Police regulations also weighed in.
13. “Fundamental rights do not live in isolation. The right of the protester has to be balanced with the right of the commuter. They have to co-exist in mutual respect.”
14. The judgment, based on a petition filed by advocate Amit Sahni, said the Delhi High Court should have intervened positively and not left the situation fluid. The administration too should have talked to the protesters.
15. “Unfortunately, despite a lapse of a considerable period of time, there was neither any negotiations nor any action by the administration, thus warranting our intervention,” the Supreme Court observed.
16. The court held it was entirely the responsibility of the administration to prevent encroachments in public spaces. They should do so without waiting for courts to pass suitable orders.
17. “The courts are not meant to give shoulder to the administration to fire their guns from,” Justice Kaul observed.

## TOPIC 47. DETENTION CENTRES

1. Gauhati High Court has asked the Assam government to submit an action-taken report on steps taken to set up detention centres outside jail premises. **In an order dated October 7**, Justice A M B Barua said if suitable government accommodations are not available, then authorities may also rent private premises for purpose. "Suitable" would mean that the accommodation meets parameters mentioned in previous communications from Union Home Ministry and a subsequent "model manual" for building detention centres.

### **What are these detention centres?**

2. In Assam, which has seen waves of migration from East Bengal (later East Pakistan and now Bangladesh) over the decades, there are six detention centres for holding "convicted foreigners" and "declared foreigners". Government sources explained that a "convicted foreigner" means a foreign national who entered India illegally and is convicted by a judicial court while a "declared foreigner" is someone who was once considered an Indian citizen per se but then declared to be a foreigners by a Foreigners' Tribunal in Assam. "Declared foreigners" most often appeal to higher courts to prove their Indian citizenship.
3. According to a reply by Home Ministry in Lok Sabha by MHA on December 10 last year, only four "declared foreigners" have been deported to Bangladesh till date so far, while as many as 1,29,009 persons have been declared foreigners by Foreigners; Tribunals.
4. Also in December, former Assam CM Tarun Gogoi told The Indian Express that it was during his tenure that detention centres were first started in Assam as per the direction of the Gauhati High Court in 2008. Apart from court order, "detention camps were started because of a suggestion by then Vajpayee government in 1998. They had issued directions to all state governments".
5. In an interaction with The Indian Express in New Delhi last year, Assam minister Himanta Biswa Sarma (BJP) had said: "The idea of detention is not ours. It is based on an order of the Gauhati High Court. As a political leader, I don't support it... I feel their identity should be digitally recorded and they should not be allowed to claim Indian citizenship in other states. Once that is done, they should be given basic human rights."

### **What led to the recent court order?**

6. The October 7 order by Justice A M B Barua came on a batch of petitions relating to detention of people in Assam. These were filed by a team of lawyers and activists, and facilitated by Studio Nilima, a research collective. The well-known advocate Nilay Dutta argued the case.
7. "The provocation for this batch of petitions came at a civil society meeting to discuss post-NRC scenario in Assam when one of the participants urged the gathering to contemplate if Assam was on its way to becoming an exhibition site of detention centres for the world to see," **Abantee Dutta, co-founder and director of Studio Nilima told The Indian Express.**
8. Activists have often criticised the condition of Assam's six detention centres (Goalpara , Kokrajhar , Tezpur, Jorhat, Dibrugarh, Silchar). Each one is inside a jail.

### **How many are held in these centres?**

9. Last year, Supreme Court ordered that 'foreigners' who have spent more than three years in Assam's detention camps could secure conditional release on fulfilment of certain conditions. This year in April, to prevent congestion in jails due to Covid-19 pandemic, SC ordered conditional release on bail of those 'foreigners' who had completed over two years in jail.
10. As per latest state government data, six centres together hold 425 detainees at present. According to a Home Ministry reply in Rajya Sabha on September 21, 15 detainees at Assam's detention centres "had died due to illness during last two years till 16.09.2020 while undergoing treatment in various hospitals of the state".

### **What has the High Court ordered?**

11. The High Court said "detention centres must be outside the jail premises" and that the state government has to "ensure that the places where they are being kept must have basic facilities of electricity, water and hygiene etc. and that there is appropriate security at these places".
12. The High Court said that 10 years had gone by since a part of the jail premises in Goalpara, Kokrajhar and Silchar were declared to be detention centres. "Certainly a period of more than 10 years cannot be understood to be a temporary arrangement. Even in respect of Jorhat, Dibrugarh and Tezpur a period of 5 years is almost over which also again cannot be strictly said to be a temporary arrangement," the order said.
13. "Considering the said aspect, it cannot be accepted that the respondents can still rely upon the communication dated 07.09.2018 to project the case that it would be permissible to declare a part of the jail premises to be detention centres," order said.

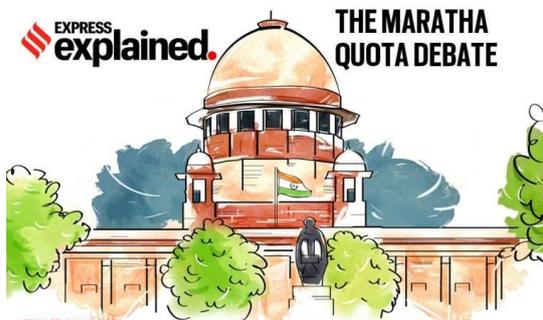
### **Is there any plan for detention centres away from jails?**

14. A new detention centre — solely for the purpose of detaining ‘illegal foreigners’ — is under construction in Matia of Goalpara district, around 150 km from Guwahati. It is being built as per guidelines laid down by the Centre, officials said. Moreover, there are plans to build 10 more such centres and a detailed project report was previously sent to the Centre.
15. The one under construction is on 20 bighas of land, nestled between farmland and forest. It is being built at a budget of over Rs 46 crore, with a capacity to house “up to 3,000 illegal foreigners”.
16. The Centre had laid down guidelines in a Model Detention Centre Manual, circulated in January 2019. Among these: members of the same family would be kept at the same centre; there would be segregated accommodation for male and female detainees; and special facilities for nursing mothers.

CIVILSIAS

## TOPIC 48. MARATHAS QUOTA

1. As Maratha Kranti Morcha (MKM) held protests over reservation for Maratha community in front of offices of four major political parties, Sambhajiraje Chhatrapati, 13<sup>th</sup> direct descendant of Chhatrapati Shivaji Maharaj and great-grandson of Chhatrapati Shahu of Kolhapur, **has appealed** to CM Uddhav Thackeray and former CM to come on one platform and work unitedly to ensure reservation for Maratha community.
2. Opposing government's move to **provide reservation to Maratha community** under EWS category, Sambhajiraje said, "EWS is already caught in a legal tangle in apex court. Besides, if reservation is given under EWS, SC may ask as to why does the Maratha community need reservation separately? Also, when a separate law has been enacted, then why EWS. What is important is getting stay vacated through proper strategy and united efforts."
3. A three-judge bench of the Supreme Court on September 8 referred to a Constitution Bench the question whether states have the power to exceed the 50 per cent reservation limit. It was hearing petitions against the June 27, 2019 order of the Bombay High Court which upheld the constitutional validity of the Maharashtra State Reservation (of seats for admission in educational institutions in the State and for appointments in the public services and posts under the State) for Socially and Educationally Backward Classes (SEBC) Act, 2018.
4. So, what is this Maratha Quota debate?



### THE ISSUE

In a September 9 interim order, a three-judge **Supreme Court** bench stayed reservations in government jobs and college admissions for the Marathas. It has referred to a 11-judge Constitution Bench the question of whether states can exceed the 50% limit on quotas set in the landmark 1992 Indra Sawhney vs Union of India case

- The SEBC Act, 2018, allows 12% and 13% reservation for the youth from the community in educational institutions and government jobs, respectively

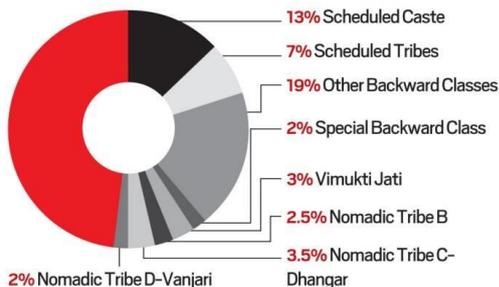
#QUIXPLAINED

1

### EXPRESS explained. EXISTING TOTAL RESERVATIONS IN MAHARASHTRA

In the 1992 case, a nine-judge SC bench had ruled that the total reservation for backward classes cannot go beyond the 50% mark. Maharashtra is one of the few exceptions

Following the 2001 State Reservation Act, the total reservation in Maharashtra was 52%



With the 12-13% Maratha quota, total reservation in the state is now 64-65%. The 10% EWS quota announced last year is also effective

#QUIXPLAINED

2

### EXPRESS explained.

### WHO ARE THE MARATHAS?



A politically dominant community who make up 32 per cent of Maharashtra's population, the Marathas historically identify themselves as warriors, often with large landholdings

- While division of land and agrarian crises have led to a decline of prosperity among middle- and lower middle-class Marathas, the community still plays an important role in the rural economy

11 of the state's 19 CMs so far have been Marathas

#QUIXPLAINED

3

### EXPRESS explained.

### WHAT HAPPENS NOW?



The discontent in the community could spill over into protests and unrest if unresolved

- The ruling coalition (the Congress, NCP and Shiv Sena) are in favour of the Maratha quota. The state government is expected to explore all options to restore it, including filing an application in the SC to vacate the stay on the reservations

- The opposition, BJP, is likely to use the issue to consolidate its political base among the Marathas and make inroads into government strongholds

TEXT: OMKAR GOKHALE & SHUBHANGI KHAPRE  
ILLUSTRATION: MITHUN CHAKRABORTY

#QUIXPLAINED

4

**TOPIC 49. NEW CALEDONIA**

1. French South Pacific territory of New Caledonia votes in a referendum on independence on Sunday, with voters expected to reject breaking away from France after almost 170 years despite rising support for the move.
2. The referendum is part of a carefully negotiated de-colonisation plan agreed in 1998, known as the Noumea Accord, designed to put an end to a deadly conflict between the mostly pro-independence indigenous Kanak population, and the descendants of European settlers known as “Caldoches”.
3. Violence in the 1980s culminated in a drawn-out hostage crisis in 1988 that saw 19 separatists killed on one side, and six police and special forces on the other.
4. It will be the second time the archipelago goes to the polls to decide on its fate in two years, after a first referendum in 2018 resulted in status quo with 56.7% of the vote. But the result still marked a shift towards pro-independence sympathies, raising campaigners’ hopes that this time it could manage to break free.
5. Political observers say a majority “Yes” to independence is unlikely, although there have been no opinion polls to help provide guidance. “I would be surprised if the Yes-vote won,” said Pierre-Christophe Pantz, a Noumea-based expert in geopolitics.



Plebiscites (advisory referendums)	Referendums (constitutional referendums)
A vote on a topic that the government uses to influence policy or law	• A vote on a bill that would change the Australian Constitution
Result holds no legal force	• To pass, a referendum must achieve a double majority: A majority of votes nationally, and a majority of votes in a majority of states.
Can be a yes/no vote, or a vote on multiple options	• Always a yes/no vote
Voting has traditionally been optional, but can be made compulsory	• Voting is compulsory

## TOPIC 50. ARMENIA - AZERBAIJAN CLASHES



1. The story of Nagorno-Karabakh, the landlocked, mountainous territory that has been at the centre of the clashes between Armenia and Azerbaijan, has been that of imperial conquests, ethnic violence, civil strife and mass uprisings. Once a part of the Armenian Kingdom, Nagorno-Karabakh (literal meaning, mountainous black garden) has seen all empires — the Romans, the Persians, the Ottomans, the Russians and the Soviets — that came to Transcaucasia establishing their rule over itself. When empires retreated or collapsed, Nagorno-Karabakh, located between the southern part of the Lesser Caucasus range and the eastern edge of the Armenian Highlands, and largely populated by ethnic Armenians, was left within the borders of Azerbaijan, igniting a protracted conflict that's still raging.
2. The roots of today's conflict go back to the time when Transcaucasia (or South Caucasus) was part of the Russian Empire. Tsarist Russia took over the region in the early 19th century after the Russo-Persian wars from the Persian Empire, which had suzerainty over the region for centuries. After the 1917 revolution, the Russian influence receded in the South Caucasus, which allowed the formation of an independent Transcaucasian Democratic Federative Republic. Karabakh became a part of this republic.
3. But the federation crumbled under its own contradictions and then emerged three separate republics — Armenia, Azerbaijan and Georgia. Nagorno-Karabakh was incorporated into Azerbaijan by the Azeri authorities. This was also the time when the Ottomans were attacking the region, mainly targeting Armenian militias, in an alliance with Azerbaijan. When the Ottomans, in the face of defeat in the First World War, withdrew from the South Caucasus, the British temporarily filled the vacuum. But they, too, failed to calm the ethnic tensions, which led to an open war between Armenia and Azerbaijan in 1920. The war was disastrous, especially for the ethnic Armenians in Nagorno-Karabakh. Azerbaijani forces, after repelling an Armenian offensive, burnt down parts of Shusha, Nagorno-Karabakh's capital.
4. When the war was raging, the Bolshevik revolutionaries took over Azerbaijan and Armenia. Nagorno-Karabakh at that time was 90% Armenian. But the Soviet leaders (Joseph Stalin was the acting Commissar of Nationalities for the Soviet Union under which the Caucasian Bureau, or the Kavburo, was created) decided to give Nagorno-Karabakh Autonomous Oblast (province) to Azerbaijan, despite protests from Armenia. The Soviets also redrew the map between Azerbaijan and Armenia, which left the Nagorno-Karabakh Oblast within the boundaries of Azerbaijan.

### **Ethnic frictions**

5. As long as the Soviet Union remained strong, the region had been relatively peaceful. But with the Soviet power receding in the late 1980s, the ethnic frictions started resurfacing. In 1988, the regional assembly of Nagorno-Karabakh passed a resolution to cancel its autonomous status and join Armenia. Azerbaijan opposed this move, leading to violent clashes. When Azerbaijan and Armenia became independent countries, after the disintegration of the Soviet Union, in 1991, the tensions over Nagorno-Karabakh led to an open war. The ethnic Armenian rebels of Nagorno-Karabakh, backed by the Armenian government, fought Azerbaijan for years. When a ceasefire was reached in 1994, the rebels had not only ensured their rule over what was the Nagorno-Karabakh Oblast, they had also extended their control to the Armenian borders, re-establishing territorial continuity with Armenia.
6. Despite the ceasefire, Armenia and Azerbaijan failed to reach a peace agreement. Azerbaijan continues to claim sovereignty over Nagorno-Karabakh. In July this year, violence erupted, which left some 16 people dead. Since then, the border has remained tense. In the current spell of clashes, which broke out on September 27, dozens have already been killed.

7. Azerbaijan, with direct support from Turkey, seems to be emboldened now. Nagorno-Karabakh is dependent on Armenia for security. Armenia, in turn, is dependent on Moscow, which enjoys good relationships with both Baku and Yerevan. That's why Russia has called for a ceasefire. But for now, Azerbaijan and its backers in Ankara seem to be in a mood to fight.
8. Fresh clashes erupted on the Armenia-Azerbaijan border on Sunday, threatening to push the former Soviet republics back to war 26 years after a ceasefire was reached. Dozens have been killed so far as the violence is entering the third day.

#### **Roots of the conflict**

9. The largely mountainous and forested Nagorno-Karabakh, home for some 150,000 people, is at the centre of the conflict. Nagorno-Karabakh is located within Azerbaijan but is populated, mostly, by those of Armenian ethnicity. The conflict can be traced back to the pre-Soviet era when the region was at the meeting point of Ottoman, Russian and the Persian empires. Once Azerbaijan and Armenia became Soviet Republics in 1921, Moscow gave Nagorno-Karabakh to Azerbaijan but offered autonomy to the contested region.
10. In the 1980s, when the Soviet power was receding, separatist currents picked up in Nagorno-Karabakh. In 1988, the national assembly voted to dissolve the region's autonomous status and join Armenia. When Armenia and Azerbaijan became independent after the collapse of the Soviet Union in 1991, the clashes led to an open war in which tens of thousands were killed. The war lasted till 1994 when both sides reached a ceasefire.
11. By that time, Armenia had taken control of Nagorno-Karabakh and handed it to Armenian rebels. The rebels have declared independence, but have not won recognition from any country. The region is still treated as a part of Azerbaijan by the international community, and Baku wants to take it back.

#### **Current clashes**

12. Despite the ceasefire, there were occasional flare-ups on the border. In July this year, at least 16 people were killed in clashes. After Sunday's violence, Azerbaijan and Armenia blamed each other. Baku said it was forced to respond after Armenian attacks killed and wounded Azeris. Armenia, on the other side, blamed Azerbaijan for launching the "large-scale" attack targeting peaceful settlements.
13. The energy-rich Azerbaijan has built several gas and oil pipelines across the Caucasus to Turkey and Europe. This includes the Baku-Tbilisi-Ceyhan oil pipeline, the Western Route Export oil pipeline, the Trans-Anatolian gas pipeline and the South Caucasus gas pipeline. Some of these pipelines pass close to the conflict zone. In an open war between the two countries, the pipelines could be targeted, which would impact energy supplies.

#### **Turkey's role**

14. Turkey has historically supported Azerbaijan and has had a troublesome relationship with Armenia. In the 1990s, during the war, Turkey closed its border with Armenia and it has no diplomatic relations with the country.
15. On the other end, the Azeris and Turks share strong cultural and historical links. Azerbaijanis are a Turkic ethnic group and their language is from the Turkic family. After Azerbaijan became independent, Turkey established strong relations with the country, which has been ruled by a dynastic dictatorship. In July, after the border clashes, Turkey held a joint military exercise with Azerbaijan. On September 28, Turkish President Recep Tayyip Erdogan blamed Armenia for the most recent clashes and offered support to Azerbaijan. There were reports that Turkey was recruiting mercenaries from West Asia to fight for Azerbaijan in the Caucasus. This fits well into Ankara's aggressive foreign policy, which seeks to expand Turkish interests to the former Ottoman territories.

#### **Russia's stand**

16. Moscow sees the Caucasus and Central Asian region as its backyard. But the current clashes put President Vladimir Putin in a difficult spot. Russia enjoys good ties with both Azerbaijan and Armenia and supplies weapons to both. But Armenia is more dependent on Russia than the energy-rich, ambitious Azerbaijan. Russia also has a military base in Armenia. But Moscow, at least publicly, is trying to strike a balance between the two. Like in the 1990s, its best interest would be in mediating a ceasefire between the warring sides.
17. Over the last one week, military action in Nagorno-Karabakh, a region disputed between Armenia and Azerbaijan, has resulted in the death of **at least 100 civilians and Armenian combatants**. While the two countries have fought over the region for decades, the current conflict is being seen as one of the most serious in recent years. Azerbaijan has not released information on its casualties.

#### **What is Nagorno-Karabakh?**

18. Straddling western Asia and Eastern Europe, Nagorno-Karabakh is internationally recognised as part of Azerbaijan, but most of the region is controlled by Armenian separatists. Nagorno-Karabakh has been part of Azerbaijan territory since the Soviet era. When the Soviet Union began to collapse in the late 1980s, Armenia's regional parliament voted for the region's transfer to Armenia; the Soviet authorities turned down the demand.

19. Years of clashes followed between Azerbaijan forces and Armenian separatists. The violence lasted into the 1990s, leaving tens and thousands dead and displacing hundreds of thousands. In 1994, Russia brokered a ceasefire, by which time ethnic Armenians had taken control of the region.
20. While the area remains in Azerbaijan, it is today governed by separatist Armenians who have declared it a republic called the “Nagorno-Karabakh Autonomous Oblast”. While the Armenian government does not recognise Nagorno-Karabakh as independent, it supports the region politically and militarily.
21. Even after the 1994 peace deal, the region has been marked by regular exchanges of fire. In 2016, it saw a Four-Day War before Russia mediated peace. The Organization for Security and Co-operation in Europe (OSCE) Minsk Group, chaired by France, Russia and the US, has tried to get the two countries to reach a peace agreement for several years.

#### **What is the fresh conflict about?**

22. It began on the morning of September 27, since when each country has claimed to have inflicted serious loss on its opponent. What’s different about the current flare-up is that this is the first time that both countries have proclaimed martial law.
23. According to the Warsaw-based Centre for Eastern Studies (OSW), the current escalation was “most likely” initiated by Azerbaijan. Media reports have noted that the clashes were possibly a fallout of Azerbaijan’s bid to reclaim some territories occupied by separatist Armenians.
24. The chairman of Azerbaijan’s National Council has said in a statement that the “military operation of the Azerbaijani army continues to clear the territories occupied by the enemy for almost 30 years”. He said September 27 was a “day of exhaustion” and alleged Armenia has occupied regions around Nagorno-Karabakh with the “direct support” of Russia to create a “security zone”.

#### **What are the stakes for Russia, and other countries?**

25. The conflict is getting worldwide attention because of the involvement of regional rivals Turkey and Russia. Muslim-majority Turkey backs Azerbaijan, and recently condemned Christian-majority Armenia for not resolving the issue through peaceful negotiations. Turkey recently declared unconditional support to Muslim-majority Azerbaijan.
26. Russia and Turkey also back opposite sides in the civil wars playing out in Syria and Libya and Turkey’s support for Azerbaijan may be seen as an attempt to counter Russia’s influence in the region of South Caucasus.
27. Russia’s role is somewhat opaque since it supplies arms to both countries and is in a military alliance with Armenia called the Collective Security Treaty Organisation. In a statement released on Monday, Dmitry Peskov, the Press Secretary of the President of the Russian Federation, said Russia “has always taken a balanced position” on the matter and has “traditionally good relations” with both countries. He added that Russia is in contact with Turkey regarding the situation in Nagorno-Karabakh.
28. Other countries, including the US, have limited their participation to appeals for maintaining peace so far. For all countries, the region is an important transit route for the supply of oil and natural gas to the European Union.

#### **What next?**

29. As of now, both sides are standing their ground. The Russian state news agency TASS quoted Azerbaijan President Ikhram Aliyev as saying that for the fighting to stop, Armenia must unconditionally leave Nagorno-Karabakh.
30. On Monday, the Armenian government lodged a request with the European Court of Human Rights (ECHR) for an interim measure (applicable only when there is imminent risk of irreparable harm) against Azerbaijan. It requested the court to indicate to the Azerbaijani government to “cease the military attacks towards the civilian settlements along the entire line of contact of the armed forces of Armenia and Artsakh”.

## TOPIC 51. GILGIT - BALTISTAN

1. Pakistan initially governed Gilgit-Baltistan directly from the central authority after it was separated from 'Azad Jammu and Kashmir' on April 28, 1949
2. On March 2, 1963, Pakistan gave away 5,180 sq km of the region to China, despite local protests
3. Under Prime Minister Zulfikar Ali Bhutto, the name of the region was changed to the Federally Administered Northern Areas. Now, the region is set to become Pakistan's fifth state
4. Seven decades after it took control of the region, Pakistan is moving to grant full statehood to Gilgit-Baltistan, which appears as the northernmost part of the country in its official map. The scenic region, which was featured in Hollywood thrillers like Vertical Limit (2000), was part of the erstwhile princely state of Jammu and Kashmir and is claimed by India.
5. During the first Indo-Pak war of October 1947, Pakistan occupied 78,114 sq km of the land of Jammu and Kashmir, including the 'Northern Areas'. The Northern Areas is the other name of Gilgit-Baltistan that Pakistan has used for administrative reasons because it was a disputed territory.
6. But that is likely to change as an assembly election on November 15 will pave the way for fuller political rights for the roughly 1.2 million residents of the region, which will become the fifth State of Pakistan after Sindh, Punjab, Balochistan and Khyber Pakhtunkhwa. The political nature of Gilgit-Baltistan has been directionless from the beginning. Pakistan initially governed the region directly from the central authority after it was separated from 'Azad Jammu and Kashmir' on April 28, 1949. On March 2, 1963, Pakistan gave away 5,180 sq km of the region to China, despite local protests. Under Prime Minister Zulfikar Ali Bhutto, the name of the region was changed to the Federally Administered Northern Areas (FANA).
7. Pakistan passed the Gilgit-Baltistan Empowerment and Self Governance Order in 2009, which granted "self-rule" to the 'Northern Areas'. There were protests in the area at that time from people who demanded an executive form of government based on international resolutions. The local situation altered considerably with Pakistan signing an agreement with China for mega infrastructure and hydel power projects in September 2009. With the agreements arrived Chinese investments and heavy machinery, which found both support and opposition from the locals.
8. On January 17, 2019, a seven-judge bench of the Supreme Court of Pakistan, led by Chief Justice Mian Saqib Nisar, took up the constitutional status of Gilgit-Baltistan. The purpose of the court's intervention was to determine the extent of political rights that could be enjoyed by the people of the 'Northern Areas'. Over the years, the region has acquired a government and a council, which gave it a de facto status of a province of Pakistan, but the constitutional status of the region remained vague without explicit statehood. The Supreme Court allowed Islamabad to amend a 2018 administrative order to hold general elections in the region. The Gilgit-Baltistan Order of 2018 provided for administrative changes, including empowering the Prime Minister of Pakistan to legislate on an array of subjects.

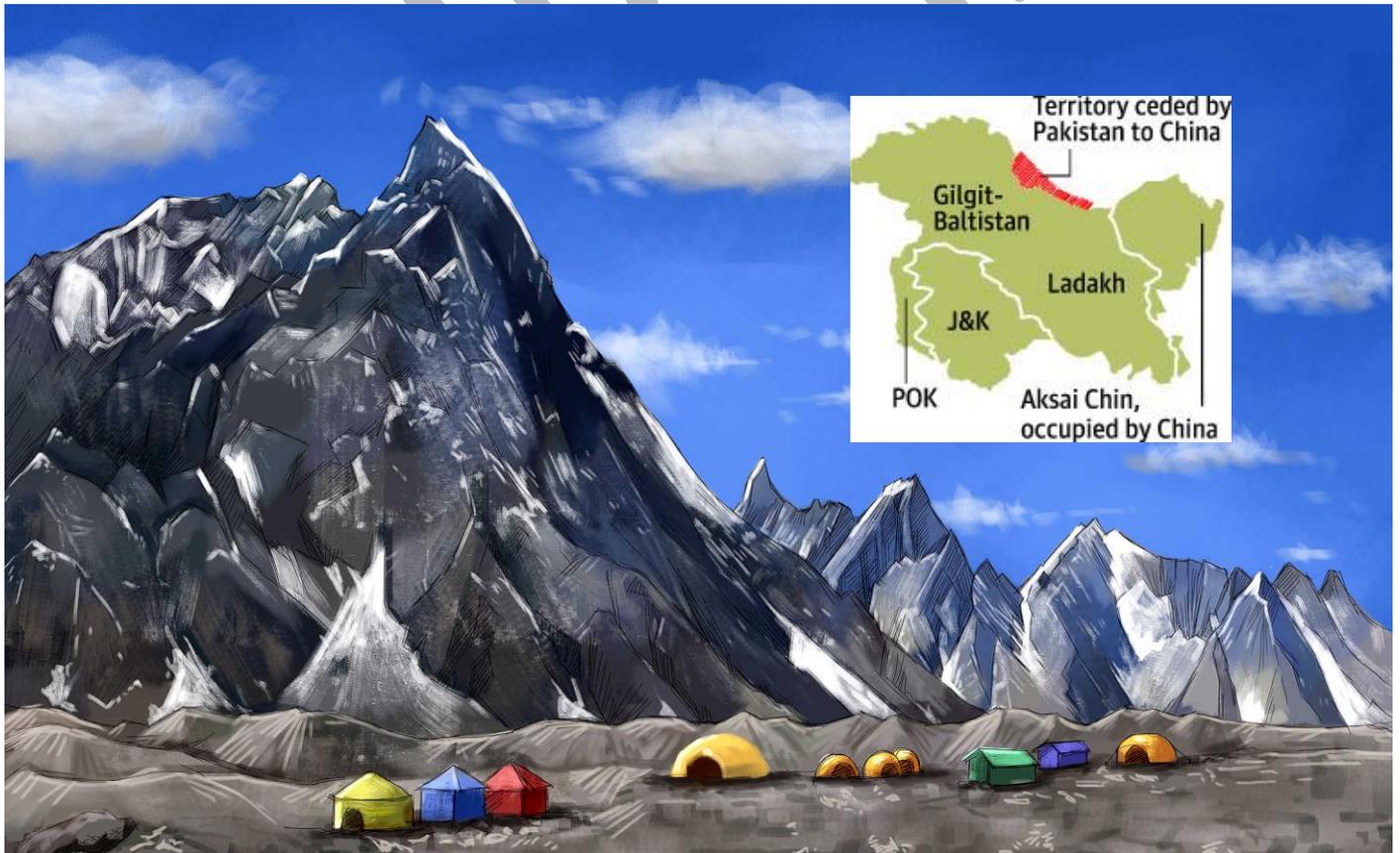
### **Sense of alienation**

9. One of the main reasons for the rebellion in the region in 1947 was the sense of alienation that the population felt towards the Dogra rulers of Srinagar, who operated under the protection of the British government. Under the post-1947 special administrative arrangement, local councils worked to meet economic, social and educational development of the region. Irrigation channels, protective bunds, roads and pony tracks were built during the early years of Pakistan.
10. According to Banat Gul Afridi, a bureaucrat who wrote an authoritative account of life in Baltistan, a post office was added between 1948 and 1958 when the bloodless coup of General Ayub Khan took place in Pakistan. Radio, telegraph and telephone stations were added in the next decade.
11. One of the most mountainous regions in the world that is rich with mines of gold, emerald and strategically important minerals, and is known for its extraordinary scenic beauty, diversity and ancient communities and languages, Gilgit-Baltistan is largely an underdeveloped region.
12. It's home to K-2, the second tallest mountain in the world. Tourism remains restricted by many factors, including military hostility, though the region has some of the ancient Buddhist sculptures and rock edicts. It is also home to an old Shia community, which often finds itself subjected to persecution in Pakistan's urban centres. At present, a Governor and an elected Chief Minister rule the region, which is divided into Gilgit, Skardu, Diamer, Astore, Ghanche, Ghizer and Hunza-Nagar.
13. The region is known for high altitude dams because of both local and Islamabad-driven initiatives. Mountain streams and rivers are often harvested for local community needs. The tradition of building dams and bunds dates back to the reign of Balti King Ali Sher Khan Anchan of 1580-1624, who built the famous bund at Satpara

Lake, which helps in watering Skardu. The water-rich region's biggest hydroelectricity project is the Diamer-Bhasha dam, which was launched in July 2020.

### **Indian protest**

14. Following Pakistan's announcement of holding the legislative election in Gilgit-Baltistan, India reiterated its territorial sovereignty over the region with the Ministry of External Affairs stating that the Pakistani move to change the status of the region will "have no legal basis whatsoever". India has consistently opposed Pakistan's activities in Gilgit-Baltistan. It also opposed the announcement of the commencement of the Diamer-Bhasha dam in July. There have been local and international concerns as reports suggest priceless Buddhist heritage will be lost once the dam is built.
15. India has objected to the use of Gilgit-Baltistan to build and operate the China Pakistan Economic Corridor (CPEC), which cuts through the region before heading to the Arabian Sea coastline of Balochistan's Gwadar port.
16. Beginning with the August 5, 2019 decision by India to withdraw the special status of Jammu and Kashmir, a number of developments have taken place on both sides of the Line of Control. Senior leaders like Defence Minister Rajnath Singh declared that the decision will pave the way for reclaiming Pakistan-occupied Kashmir (including Gilgit-Baltistan). India launched a new political map last November, which showed the Gilgit-Baltistan region as part of the new Union Territory of Ladakh. In response, Pakistan laid claim to Ladakh and the whole of Jammu and Kashmir in its map. An election and full statehood for Gilgit-Baltistan will likely infuriate India, which will perceive it as a step to deny reclaiming PoK ever in the future.
17. Gilgit-Baltistan is important for Pakistan as it is the gateway for the CPEC. But for India, the region represents the continuity with the past of Jammu and Kashmir, which included Gilgit-Baltistan at the time of Partition of 1947. Significantly, the ongoing stand-off with China at the Line of Actual Control in Eastern Ladakh has a Gilgit-Baltistan connection as the Darbuk-Shyok-DBO road of India is viewed as a tactical roadway to access the Karakoram Pass, which provides China crucial access to Gilgit-Baltistan and Pakistan.
18. Full statehood for the region may give Pakistan a political and legal upper hand and strengthen China's position in the region, but Gilgit-Baltistan will continue to remain one of the hotspots in the tense India-Pakistan relations.



## TOPIC 52. AUSTRALIA - CHINA



1. Australia and China's cordial economic ties, established over the last three decades, have been soured this year over several points of friction. China has been unhappy with Australia becoming more vocal about its handling of Uighur Muslims and the protests in Hong Kong. But it was Canberra's appeal for an independent global inquiry into the origins and initial response of Covid-19, that really riled up Beijing.
2. Australia's staunch stances in recent months exposes a latent fear of China's growing influence in the country's domestic space, ranging from politics to educational institutions to real estate. China's rising presence in the Indo-Pacific region despite the pandemic has only added to this distrust. But despite the economic cost, Australia has made one thing clear: it will stand for its "values" and not be "intimidated."
3. China is Australia's largest trading partner in terms of both exports and imports. China's share in Australia's exports reached a record A\$117 billion, or 38 per cent, in 2019, more than any other country. Australian sectors like mining, tourism, education benefit from trade with China. China even imports products such as milk, cheese, wine and meat.
4. The Asian superpower's investment in the mining and agriculture sector also plays a big part in this. Over the years, it has been increasing its investment in Australian infrastructure and real estate products too. The maximum number of foreign students in Australian universities and tourists also originate from China.
5. So far the Chinese economic aggression over tariffs has been limited to agriculture and food production. The spat has not touched the one industry that contributes heavily to their economic relationship: heavy metals. Perhaps the two sides know that going into this area will leave a heavier impact, one that would be too hard to reverse.

### Points of friction

6. This year, at least two issues have dominated the deteriorating relationship between the two countries.
7. **Australia's Covid-19 inquiry:** In April 2020, Australia's Minister of Home Affairs Peter Dutton suggested the start of an inquiry into the origins and the initial handling of the coronavirus. This was supported by the Australian Foreign Minister as well as Prime Minister Scott Morrison. Morrison called the suggestion "entirely sensible and reasonable" and asserted that the world ought to know everything about a virus that had claimed so many lives across the globe.
8. To this, China's response was multi-pronged. The first reaction came from the Chinese Ambassador to Australia Cheng Jingye, who alleged that Australia was teaming up with the US to spread "anti-China propaganda". Jingye further called for boycotting Australia as a tourist and higher education destination and banning Australian products like wine and beef.
9. In May, Chinese authorities announced imposing an 80 per cent tariff on barley imports coming from Australia. China is the most important market for Australia barley. Days after the announcement China imposed tariffs totaling 80.5 per cent. China also began a trade probe into Australian wine and suspended import permits for four large beef processing plants.
10. **Tension over journalists:** The second diplomatic spat began with the detention of Cheng Lei, an Australian news anchor based in Beijing by the Chinese authorities after she was suspected of "criminal activities" that

endangered China's national security. Australian government said the journalist was held under "residential surveillance" at an unknown location.

11. After this, two more Australian journalists working in China were questioned and declared persons of interest in the Cheng Lee detention case. Both the journalists were visited by Chinese police after midnight and were asked to report for questioning by the Ministry of State Security.
12. Following their house searches, the journalists sought refuge in Australian diplomatic missions, as they were not allowed to leave the country. The tensions were on full display for five days after which China finally agreed to allow them to fly back to Australia. After their departure, there are no more Chinese reporters employed by the Australian media left in the country, a first since the 1970s.
13. Few days after their departure, China's state news agency Xinhua released a report that claimed the Australian intelligence had raided an unspecified number of Chinese journalists stationed in Australia and that this "grossly violated" their rights. The Australian authorities had no response to this allegation.
14. **Ideological issues:** The two countries have also been at loggerheads on other ideological issues previously too. After reports of China keeping Uighur Muslims in state-run detention camps surfaced, Australia was swift to respond and expressed "deep concern" over the "human rights situation."
15. Similarly, after China imposed the National Security Law in Hong Kong, Australia suspended its extradition treaty with Hong Kong and said the law undermines Hong Kong's autonomy and suppresses opposition to Mainland China. Australia also decided to extend visas for Hong Kong residents. In both instances China responded staunchly and asked Australia to not meddle in its "internal matters."

#### **A search for 'like minded' allies**

16. Canberra has started looking for way to wean itself away from this excessive Chinese dependence and is keen to strengthen its ties with more ideologically compatible allies like India, Japan and the United States. In fact, Prime Minister Scott Morrison expressed the need to connect with more "like-minded democracies" to counter the Chinese aggression and expansion.
17. At the Quadrilateral Initiative, or the "Quad" with counterparts from India, United States and Japan, Australian Foreign Minister Marise Payne highlighted the need for an "open, resilient and inclusive Indo-Pacific region, that is governed by rules and not power." Australia also focussed on vital sectors of its economy like minerals, for which it is heavily depends on its trade with China.
18. Since its inception in 2007, the Quad has been labelled by analysts as an attempt to counter China's growing footprint in the Indo-pacific region. The meeting comes at a time when three out of four participant countries are at loggerheads with China on some issue or another.
19. India has been involved in a border standoff with China that has now lasted for over five months. Despite several rounds of "disengagement" between the two sides, the conflict has not died out. Similarly, under the Trump administration, US-China ties have been at their worst in decades. At the Quad meeting, US Secretary of State Mike Pompeo accused China's governing party of "exploitation, corruption and coercion".

## TOPIC 53. QUAD

1. India's involvement in the Quad — the forum that also involves the US, Japan and Australia — has been criticised as a deviation from New Delhi's traditional policy of non-alignment. In order to clear the "confusion on what the Quad is and its future in India's international relations", some key questions must be answered, says C Raja Mohan, Director of the Institute of South Asian Studies, National University of Singapore, and Contributing Editor of *The Indian Express*.
2. Over the years, India has experimented with alliances of different kinds – during World War I, some nationalists aligned with imperial Germany to set up the first Indian government-in-exile in Kabul; during World War II, Subhas Chandra Bose joined forces with imperial Japan to set up a provisional government in Port Blair; and in independent India, Jawaharlal Nehru, who unveiled and championed non-alignment, signed security treaties with Bhutan, Nepal, and Sikkim. Also, Nehru, who actively opposed American alliances in Asia, turned to the US for military support in 1962.

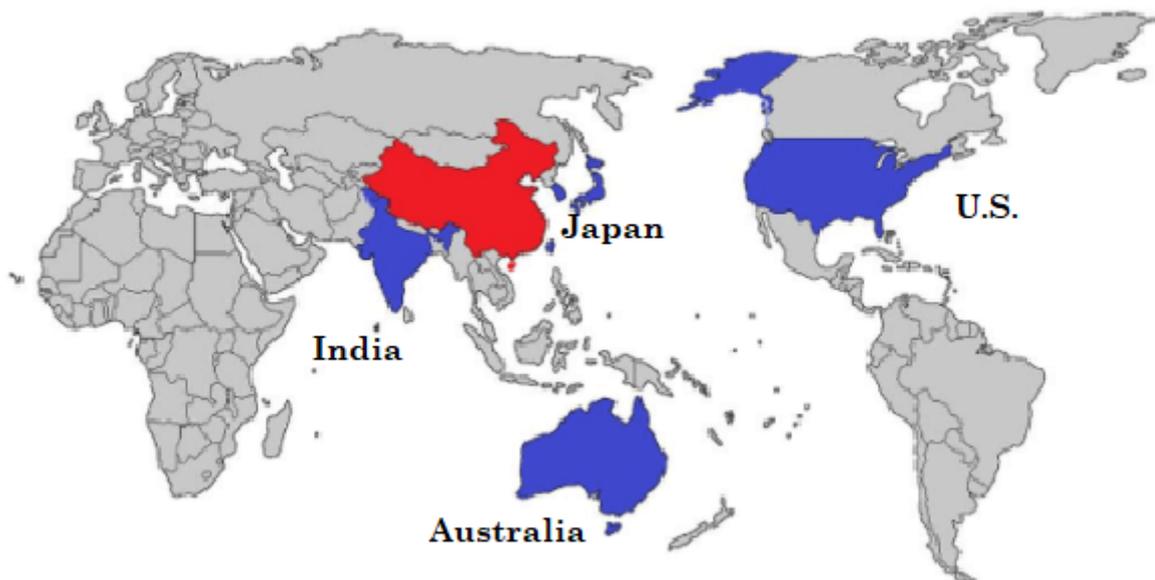
### Is an alliance with the US on the cards?

3. Unlikely, **argues Raja Mohan**, because Donald Trump's administration is firmly against alliances. More importantly, India has never asked for an alliance.
4. Both countries, however, are interested in building issue-based coalitions in pursuit of shared interests.

### Are alliances essentially instrumental in nature?

5. In the past, India's treaties with Nepal, Bangladesh, and Russia were meant to address India's security imperatives, while most of China's alliances were fundamentally transactional in nature. Democratic India cannot be as brutally transactional as communist China – however, Raja Mohan concludes, New Delhi can learn a thing or two from the way Beijing has forged alliances. "An India that puts its interests above the doctrine will find coalitions like the Quad critical for its international prospects," **he writes**.

### **The "Quad" Counter to China**



## TOPIC 54. H-1B VISA

1. In yet another **policy stance change on H-1B visa** within six months, US administration on October 6 said it was announcing an “interim final rule” which will “strengthen” non-immigrant work visa programme. The new rules will be effective 60 days from their publication in Federal Register, which is official journal of US government, much like Gazette of India.

### **What is an interim final rule?**

2. Executive policies announced by agencies such as the Department of Homeland Security (DHS) or the US Citizenship and Immigration Services (USCIS) require them to consult stakeholders and give them a notice period of 60 days and seek comments before any sweeping changes are brought in. This method allows agencies such as DHS to act with urgency and within a specified time after a new rule or law is made.
3. In the latest announcement on the proposed policy changes, the DHS said that USCIS would forgo the usual 60-day comment and notice period to “immediately ensure that employing H-1B workers will not worsen the economic crisis caused by COVID-19”.
4. The impact that the pandemic was having on the US economy and its domestic workers was an “obvious and compelling fact” which justified the agency issuing an interim final rule.

### **What are the new proposed changes?**

5. As per Department of Homeland Security, whose main job is to secure US from threats it faces, H-1B work visa regime had over years gone far beyond the mandate for which it was launched, often “to the detriment of US workers”. Therefore, in order to bring back the integrity to the work visa regime, the DHS has announced some changes which would ensure that H-1B petitions are approved only for “qualified beneficiaries and petitioners”.
6. Though the exact contours and specifications of the change is likely to be announced by the DHS over the week, it has specified that the new rule will narrow down the definition of what constitutes a “specialty occupation”.
7. This means that companies and agencies which hire workers on H-1B visas will have a tough time proving to the immigration agencies that such employees are not available from the domestic pool of US workers.
8. The second proposed change relates to companies allegedly making fictitious work offers to fictitious employees just to fulfil their quota of H-1B visa applications approved. The US administration has in past alleged that both Indian and US-based companies have often given H-1B work visa offers to foreign employees “just on paper”, thereby allowing them to evade some part of taxes, while also undercutting the jobs for eligible US workers.
9. The third and final proposed rule change talks about better enforcement of the new H-1B norms which will be announced later. This, the DHS said, will be done through worksite inspections and monitoring compliance, before, during and after the H-1B work visa is approved.

### **How will the changes impact Indian IT and other H-1B visa holders?**

10. Every year, the US administration issues 85,000 H-1B work permits in all. Of these, 65,000 are for people with specialty occupations, while the rest 20,000 are reserved for those foreign workers who have earned a masters or higher university degree in the US. Every year, Indians and Indian companies corner a lion’s share of the number of H-1B work permits issued each year.
11. As of April 1, 2020, US Citizenship and Immigration Services (USCIS) had received about 2.5 lakh H-1B work visa applications, according to official data. Indians had applied for as many as 1.84 lakh or 67 % of total H-1B work visas.
12. Since the DHS has proposed to narrow down the definition of what would constitute a “specialty occupation”, it is likely that the 65,000 visas issued every year would be brought down significantly.
13. Though Indian information technology giants such as TCS, Infosys, Wipro, HCL and others have in the past insisted that they have reduced their dependence on H-1B visas to a large extent, a reduction in the overall quota of H-1B visa workers would still mean that the number of workers they would either have to shell out more money to hire local talent or pay more to the existing H-1B work visa holders.
14. The proposed change could also impact global IT companies which hire H-1B visa workers in a great number.
15. According to the US government’s official numbers, global tech giants such as Amazon hired up to 3000 H-1B work visa holders in 2019, while Google hired between up to 2,500 such workers during the year. Most of these H-1B work permit holders were Indians.
16. H-1B visas, most often used by Indian and Chinese companies, are generally approved for a period of three years for a person, but many visa holders change employers to extend their US stay. The visa norms have often been criticised for allowing cheap labour in the US at the expense of its local workforce.

**What happens to the old rules and relaxations announced on H-1B visa regime?**

17. Though the DHS has come out with a broad plan on what it intends to do to “overhaul” the H-1B work visa regime, the final contours and exact changes are not known yet. The changes are also seen as a poll promise being fulfilled by US President Donald Trump.
18. Trump had, while taking charge as president in 2017, hinted that the visa regime would be overhauled to ensure that the system was no longer gamed by companies which continued to pay lesser than the annual average salary paid to US workers, thereby undercutting jobs from them.
19. Once the DHS comes out with the final norms, it will have to be seen whether the new rules apply only to the fresh work visas that are issued or also to the existing visa holders. Until then, the relaxations announced by the Trump administration in August would continue to apply.

CIVILSIAS

## TOPIC 55. DOMINANCE OF BIG TECH

1. On Wednesday, a US House of Representatives panel submitted report of a bipartisan investigation into working of Amazon, Apple, Google and Facebook. The 449-page report called for big technology companies to be broken up and for a “presumptive prohibition against future mergers and acquisitions by dominant platform”.

### **Why was the House of Representatives probing big tech companies?**

2. These companies have been on the government radar in many countries for being big spenders and trying to steamroll competition by either buying out their rivals or pushing vendors to avoid working with their competitors. For example, the US Congress wanted to know from Apple if it had, in order to promote an app that allows parents to limit screen time for children, thrown out a rival app on the pretence that it was not safe.
3. As part of reviewing the state of competition online, the US House panel from June 2019 probed Apple, Amazon, Google and Facebook, and how they controlled the flow of data for themselves as well as their competition. It collected 1.3 million documents, listened to secret testimonies from several employees in these firms, and questioned company heads Jeff Bezos (Amazon), Tim Cook (Apple), Mark Zuckerberg (Facebook) and Sundar Pichai (Google) over the evidence that suggested the companies have exploited, entrenched and expanded their power over digital markets in anti-competitive and abusive ways.

### **What are the findings?**

4. The panel observed that the answers by Bezos, Cook, Zuckerberg and Pichai were often “evasive and non-responsive”. This, it said, raised fresh questions on the powers assumed by these big tech companies and whether they considered themselves “beyond the reach of democratic oversight”.
5. The panel said each of these companies was now acting as a “gatekeeper” over a key channel of distribution, which meant that they had full control over what went on in their respective domains. “By controlling access to markets, these giants can pick winners and losers throughout our economy. They not only wield tremendous power, but they also abuse it by charging exorbitant fees, imposing oppressive contract terms, and extracting valuable data from people and businesses that rely on them,” the chair of the House panel said in his remarks.
6. In a way, the panel said, these companies ran the marketplace for their respective domains, while also competing in it. And to ensure they retain the number one position, the companies have resorted to “self-preferencing, predatory pricing, or exclusionary conduct”, it noted.

### **What has the panel recommended?**

7. One recommendation is to push for “structural separations” of the big tech companies. What this essentially means is that the panel wants these companies to be broken into smaller companies to ensure that they would not be able to have as much influence as they have currently over the digital marketplace.
8. Another recommendation of panel is that these companies be prohibited from operating in an “adjacent line of business”.
9. A third recommendation is that there should be a “presumptive prohibition” against big tech companies going for mergers and acquisitions. Zuckerberg, whose companies had bought Instagram and WhatsApp in some of the biggest deals in technology space, has been accused of using money power to outright buy competition and then pushing them aggressively against other competitors.

### **What did the probe find about big tech influence in India?**

10. The role of the of big tech companies in stifling competition in India finds mention in the US panel’s report. It refers to the various antitrust probes going on against Google in India. Google has had run-ins with regulators, especially the Competition Commission of India (CCI).
11. In the last two years, the CCI has raised issues with Google’s commercial flight search option, its dominant position in the search marketplace, the abuse of its dominant position in the Android phone and smart television market, and others.
12. In 2019, for example, India’s antitrust body had held Google guilty of misuse of its dominant position in the mobile Android market and said the company had imposed “unfair conditions” on device manufacturers to prevent them from using other operating systems. In its 14-page order, CCI had held that requiring mobile phone makers to pre-install the entire Google mobile services pack was unfair. Recently, Google has also been accused of following a high and unfair commission mechanism for apps listed on its Play Store.
13. With the US House panel focusing on the dominance of big tech companies across the world, the companies are likely to come under more scrutiny from regulators including the CCI in India. In coming years, as India plans to regulate the use of personal and non-personal data, these tech companies could face scrutiny over how they manage and use the data they collect from users in India, according to experts.

14. Amazon and Facebook, which are trying to enter the retail space in India, are also likely to be under the lens for the way they price their products and the space they give/deny to their competition.

**What global impact could the US panel recommendations have?**

15. Although the recommendations of the House panel are not legally binding on either the US government or any other agency, it could set the ball rolling in the direction of more controls.
16. For example, the panel has said Congress should bring back its culture of probing and asking tough questions of companies that seem to break monopoly and anti-competitive laws. It has also said the law on vertical mergers and overriding problematic precedents in the law should be given a rethink.
17. These recommendations may not impact any big tech companies directly as of now, but could increase the scrutiny of regulators and probe agencies worldwide.
18. Apart from increased federal scrutiny, big tech companies are also likely to face more questions and probes from states in the US, which have in the recent past hauled these firms up for not doing more to control their influence on day-to-day aspects of life.

CIVILSIAS

## TOPIC 56. CLIMATE CHANGE AND WILDFIRES



1. In an updated review of scientific articles that try to establish a link between climate change and fire risk published since January 2020, scientists note that human-induced climate change promotes the conditions on which wildfires depend, enhancing their likelihood and challenging suppression efforts. The update focuses on the ongoing wildfires in the western US and the bushfires that ravaged southeastern Australia in 2019-2020.
2. Further, the authors note that climate change increases the frequency and severity of fire weather around the world and that land management alone “cannot explain recent increases in #wildfire because increased fire weather from climate change amplifies fire risk where fuels remain available”.
3. Earlier this month, US President Donald Trump dismissed concerns that climate change could be fuelling the wildfires in California that have forced thousands of people to leave their homes and have destroyed millions of acres of land. Instead, Trump has blamed poor forest management as the reason for the wildfires and said, “It’ll start getting cooler, you just watch”.
4. However, this is not the first time that Trump has made such a claim. In 2018, when California was facing another season of devastating wildfires, Trump said, “There is no reason for these massive, deadly and costly forest fires in California except that forest management is so poor. Billions of dollars are given each year, with so many lives lost, all because of gross mismanagement of the forests. Remedy now, or no more Fed payments!”.

### **What factors can influence fire weather?**

5. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which was published in 2013, identified a few factors that could influence the way wildfires play out. These include global increase in average temperatures, global increases in the frequency, intensity and extent of heatwaves (breaching of historically extreme temperature thresholds) and regional increases in the frequency, duration and intensity of droughts.

### **If wildfires are usual in areas with warm and dry weather conditions, why are scientists interested in studying them further?**

6. While wildfires are typical in both California and parts of Australia in the summer months, the intensity and scale of wildfires that these areas have seen in recent years has raised some concerns among scientists about the linkages between human-induced climate change and fire risk.

### **What does the new analysis tell us?**

7. Scientists are wary of attributing any single contemporary event to climate change, mainly because of the difficulty in completely ruling out the possibility of the event having been caused by some other reason, or a result of natural variability. However, in the results of the new analysis, the authors note that natural variability is superimposed on the increasingly warm and dry conditions that have resulted from climate change, which has led to more extreme fires and more extreme fire seasons.
8. Further, they note that there is an “unequivocal and pervasive role of climate change in increasing the intensity and length in which fire weather occurs”. Significantly, the authors have said that while land management is also likely to contribute to the wildfires, it does not alone account for the recent increases in the extent and severity of the wildfires in the western US and in southeast Australia.

### **What happened in Australia last year?**

9. Last year, photographs of Australian towns and villages that were ravaged by the bushfires made global headlines. While bushfires are routine in Australia in the summer months, the scale and intensity of the fires last year was unprecedented. The fires killed thousands of animals and impacted more than 10 million hectares of forest land, which is an area the size of South Korea. Scientists suggested at the time that there was strong evidence to suggest that the bushfires, which were especially fierce last year, could be linked to climate change.

## TOPIC 57. WESTERN GHATS



Map not to scale; Google Earth image; Graphic: Ritesh Kumar

1. On Monday, Kerala Chief Minister Pinarayi Vijayan “launched” a tunnel road project that would connect Kozhikode with Wayanad. The launch actually meant the beginning of a survey and fixing the final alignment ahead of the detailed project report, which should be followed by steps such as technical sanction, environmental impact assessment report, and seeking mandatory clearance from various agencies including the Union Ministry of Environment, Forest and Climate Change (MoEFCC). Vijayan promised the survey would be over in three months and work would start next March with a deadline of 34 months for completion.

### **What is this Kozhikode-Wayanad tunnel road?**

2. The 7-km tunnel, being described as the third-longest in the country, is part of an 8-km road cutting through sensitive forests and hills of the Western Ghats. Its endpoints are at Maripuzha in Thiruvambady village panchayat (Kozhikode) and Kalladi in Meppadi panchayat (Wayanad). At present, Wayanad plateau is linked to the rest of Kerala via four roads, all with hilly sections, the longest being the 13-km Thamarassery Ghat Road along the Kozhikode-Mysuru NH 766.
3. The tunnel road is an outcome of a decades-long campaign for an alternative road as the Thamarassery Ghat Road is congested and gets blocked by landslides during heavy monsoon. A proposal for widening the road has been pending clearance from the MoEFCC. Two alternative routes have been suggested connecting different parts of Kozhikode district to Wayanad, but those proposals did not make much headway either, mainly because of forest patches that would need to be cleared.

### **How did this plan for a tunnel road emerge?**

4. At the very route of the proposed tunnel road, a surface road had been debated since the 1970s, but did not take off because forest land was involved. In 2015, the previous government finally ordered a survey by a private agency for a road through the forest between Maripuzha and Kalladi. The agency found the surface road an uphill task, but suggested cutting a tunnel with entry and exit points in private lands close to the forest.
5. After the current government came to power in 2016, the project got a push. When Metro pioneer E Sreedharan was approached for support from Delhi Metro Rail Corporation, he suggested Konkan Railway Corporation (KRC) take it up. In 2019, the government engaged KRC as a special purpose vehicle for the survey, DPR and project execution on a turnkey basis. The government gave administrative sanction for the project earlier this year and promised Rs 658 crore from Kerala Infrastructure Investment Fund Board (KIIFB).

### **How will the road impact the ecology?**

6. The Forest Department has identified the proposed route as a highly sensitive patch comprising evergreen and semi-evergreen forests, marsh lands and shola tracts. This region is part of an elephant corridor spread between Wayanad and Nilgiri Hills in Tamil Nadu. Two major rivers, Chaliyar and Kabani that flows to Karnataka, originate from these hills in Wayanad. Eruvazhanjipuzha, a tributary of Chaliyar and the lifeline of settlements in Malappuram and Kozhikode, begins in the other side of the hills. The region, known for torrential rain during monsoon, has witnessed several landslides, including in 2019 at Kavalappura near Nilambur and at Puthumala, Meppadi in Wayanad.

### **So, will it not face a challenge in getting environmental clearance?**

7. Proponents of the project have been stressing that the tunnel will not destroy forest (trees). The MoEFCC guidelines state that the Forest Act would apply not only to surface area, but the entire underground area beneath the trees. For tunnel projects, conditions relating to underground mining would be applicable. As the proposed tunnel is 7 km long, it will require emergency exit points and air ventilation wells among other measures, which would impact the forest further.

### **How much has actually been cleared?**

8. With an eye on elections early next year, the government “launched” the project with several procedures pending: a survey report, DPR and even environmental clearance. The two entry points of the tunnel are in Thiruvambady and Kalpetta constituencies, both held by the ruling CPI(M). Forest officials, meanwhile, are yet to get applications from KRC for conducting the survey, which is now outside the forest land.

CIVILSIAS

## TOPIC 58. DECOMPOSER CAPSULES



1. Paddy stubble-burning season is here, and satellite remote sensing data from the Indian Agriculture Research Institute (IARI) show a five-fold increase in **the number of farm fires in Punjab, Haryana, and Uttar Pradesh** during the first six days of October compared to the corresponding dates in 2019.
2. While this initial spike might flatten in the coming days, the SAFAR-India short-range forecast on Thursday (October 8) said the **overall AQI in Delhi** was in the “higher end moderate category”, and was forecast “at the higher end of moderate to the poor category” for October 9.
3. The burning of paddy stubble left in the fields after harvest has been a cause of concern for the past several years as it contributes to air pollution in the northern Gangetic plains and its already polluted cities like Delhi.
4. It is a common practice in October and November across North West India, but primarily in Punjab, Haryana, and Uttar Pradesh to quickly clear crop residue from their fields before planting the rabi wheat crop.
5. Several solutions have been proposed over the years to tackle the issue. The most recent one, which has been billed as a game-changer if found successful, is the ‘Pusa Decomposer’ capsule developed by IARI.

### What is the ‘Pusa Decomposer’?

6. It is essentially a fungi-based liquid solution that can soften hard stubble to the extent that it can be easily mixed with soil in the field to act as compost.
7. This would then rule out the need to burn the stubble, and also help in retaining the essential microbes and nutrients in soil that are otherwise damaged when the residue is burned.
8. Impact on Delhi's air
9. Farmers in Punjab and Haryana burn paddy stubble around this time before they prepare the soil for the rabi crop. Smoke from burning crop stubble contributes to air pollution over the national capital and large parts of the Indo-Gangetic plain every winter.

### How long does it take for the decomposer to work?

10. The window of time required for the solution to work, which is currently the main concern of farmers, is around 20 to 25 days, as per the IARI.
11. Farmers argue that this window is too long for them, as they ideally wait about a week or 10 days after harvesting the non-basmati variety of rice — which leaves hard stubble — to sow the wheat crop.
12. IARI scientists, however, say that farmers do not necessarily have to plant the next crop in a rush — and that 20-25 days is enough waiting time.

### How is the decomposer to be used by farmers?

13. There are seven strains of fungi that IARI has identified after research which help in rapid breakdown of hard stubble.
14. These seven strains of fungi are packed into four capsules, which cost about Rs 20 per pack of four. But there is a process for developing the liquid solution from these capsules which can take about four to five days.
15. It starts with boiling 25 litres of water mixed with 150 grams of jaggery, which scientists say has properties that help in multiplication of fungi.
16. After this mix has cooled, 50 grams of besan (or gram flour) is added to it along with four ‘Pusa Decomposer’ capsules.
17. This solution is then covered with a thin piece of cloth and left in a dark room for four days. On the fourth day, a thick growth of fungi will be seen on top of the solution. This has to be mixed well, and thereafter the solution is ready for use.

### What is the ‘dose’ of decomposer that has to be used?

18. A 25-litre solution is advisable for use in one hectare of land after being mixed with 500 litres of water. It can be sprayed over the field and left to do its work.

19. IARI scientists explained that the decomposer will work even in fields where stubble has not been finely chopped with a Super Straw Management System (Super SMS) machine.
20. The Super SMS is attached with a combine harvester machine to cut paddy stubble into small pieces and spread it uniformly in the field.
21. This in itself is a stubble management process, as chopped stubble can be removed from the field or wheat can be sowed in the field even without removing the chopped stubble, however, not all farmers currently have this machine, which is offered on 50% subsidy to individual farmers.
22. About the decomposer, IARI scientists have also said that farmers do not necessarily have to wait for the entire 20-25 day window before getting to work on the field. They can start ploughing and preparing the land 10-15 days after spraying the decomposer.

**How is this technology being used?**

23. Union Environment Minister Prakash Javadekar has said that the decomposer will be used on a trial basis this year in Punjab, Haryana, Uttar Pradesh and Delhi.
24. Ministry officials said the technology would be used over 100 hectares of land in Punjab and Haryana, 800 hectares in Delhi and 10,000 hectares in Uttar Pradesh, which they said has been experimenting with a similar technology for the last three years.
25. IARI has been conducting experiments for a year-and-a-half on the decomposer. The technology was licensed for commercial use to four companies in 2019, and to two other companies in 2020.
26. Delhi has started preparing solution with help from IARI and would begin spraying it over fields October 11 onwards.
27. Chief Minister Arvind Kejriwal has said technology is inexpensive, as whole process — from development, transport and spraying of decomposer — is costing government only Rs 20 lakh.
28. The results from trials this year would give an answer to the effectiveness of the technology and decide whether its use would be scaled up in the future.

## TOPIC 59. GRAP



1. Starting October 15, some stricter measures to fight air pollution will come into force in Delhi and its neighbouring National Capital Region (NCR) towns, as part of the Graded Response Action Plan (GRAP). The action plan has been in effect for three years in Delhi and NCR.
2. Starting October 15, diesel generator sets can no longer be used in Delhi and the NCR towns of Noida, Ghaziabad, Greater Noida, Faridabad, and Gurgaon. The only exception is DG sets used for emergency and essential services.
3. Pollution control authorities will begin night patrolling to check for dust and industrial emissions, as well as the burning of waste. Mechanised sweeping and frequent sprinkling of water on roads (to make the dust settle) have been directed.
4. These steps will be incremental. Levels of pollution are expected to rise as winter approaches — and as they do, more measures will come into force, depending on the air quality.
5. These measures are part of GRAP, which was formulated in 2016 and notified in 2017. Experts have credited the actions under the plan for the improvement in Delhi's air over the past few years.

### **What is GRAP?**

6. Approved by the Supreme Court in 2016, the plan was formulated after several meetings that the Environment Pollution (Prevention and Control) Authority (EPCA) held with state government representatives and experts. The result was a plan that institutionalised measures to be taken when air quality deteriorates.
7. GRAP works only as an emergency measure. As such, the plan does not include action by various state governments to be taken throughout the year to tackle industrial, vehicular and combustion emissions. The plan is incremental in nature — therefore, when the air quality moves from 'Poor' to 'Very Poor', the measures listed under both sections have to be followed.
8. If air quality reaches the 'Severe+' stage, the response under GRAP includes extreme measures such as shutting down schools and implementing the odd-even road-space rationing scheme.
9. GRAP has been successful in doing two things that had not been done before — creating a step-by-step plan for the entire Delhi-NCR region, and getting on board several agencies: all pollution control boards, industrial area authorities, municipal corporations, regional officials of the India Meteorological Department, and others.
10. The plan requires action and coordination among 13 different agencies in Delhi, Uttar Pradesh, Haryana and Rajasthan (NCR areas). At the head of the table is the EPCA, mandated by the Supreme Court.
11. GRAP was notified in 2017 by the Centre and draws its authority from this notification. Before the imposition of any measures, EPCA holds a meeting with representatives from all NCR states, and a call is taken on which actions have to be made applicable in which town.
12. A blanket ban on the DG sets for Delhi-NCR towns from October 15 onward was announced last year as well. However, issues were raised by the Haryana power secretary at the time about deficiencies in the electrical infrastructure in commercial and residential areas developed by builders in Gurgaon.
13. Authorities from both Haryana and UP had informed EPCA at the time that they would put in required measures by winter 2020 for the supply of electricity from the grid. How the ban plays out this year remains to be seen.

### **Has GRAP helped?**

14. The biggest success of GRAP has been in fixing accountability and deadlines. For each action to be taken under a particular air quality category, executing agencies are clearly marked. In a territory like Delhi, where a multiplicity of authorities has been a long-standing impediment to effective governance, this step made a crucial difference. Also, coordination among as many as 13 agencies from four states is simplified to a degree because of the clear demarcation of responsibilities.
15. Three major policy decisions that can be credited to EPCA and GRAP are the closure of the thermal power plant at Badarpur, bringing BS-VI fuel to Delhi before the deadline set initially, and the ban on Pet coke as a fuel in Delhi-NCR.
16. The EPCA, headed by retired IAS officer Bhure Lal and including members from the Centre for Science and Environment, was constituted in 1998 by the Supreme Court. The initial mandate of the body was to ensure that Delhi's bus and auto fleet moves entirely to CNG — a mammoth task that played a crucial role in cleaning Delhi's air in the late 2000s.
17. The body continues to monitor pollution, and assists the Supreme Court in several pollution-related matters.

#### **What measures have been taken in other states?**

18. One criticism of the EPCA as well as GRAP has been the focus on Delhi. While other states have managed to delay several measures, citing lack of resources, Delhi has always been the first to have stringent measures enforced.
19. In 2014, when a study by the World Health Organisation found that Delhi was the most polluted city in the world, panic spread in the Centre and the state government. The release of a study on sources of air pollution the following year also gave experts, NGOs, and scientists a handle on why Delhi was so polluted.
20. All of these things, state government officials say, have made Delhi the obvious pilot project. For GRAP as well as EPCA, the next challenge is to extend the measures to other states effectively.

#### **ACTIONS UNDER GRAP**

##### **Severe+ or Emergency**

21. (PM 2.5 over 300  $\mu\text{g}/\text{cubic metre}$  or PM10 over 500  $\mu\text{g}/\text{cu. m.}$  for 48+ hours)
- Stop entry of trucks into Delhi (except essential commodities)
  - Stop construction work
  - Introduce odd/even scheme for private vehicles and minimise exemptions
  - Task Force to decide any additional steps including shutting of schools

##### **Severe**

22. (PM 2.5 over 250  $\mu\text{g}/\text{cu. m.}$  or PM10 over 430  $\mu\text{g}/\text{cu. m.}$ )
- Close brick kilns, hot mix plants, stone crushers
  - Maximise power generation from natural gas to reduce generation from coal
  - Encourage public transport, with differential rates
  - More frequent mechanised cleaning of road and sprinkling of water

##### **Very Poor**

23. (PM2.5 121-250  $\mu\text{g}/\text{cu. m.}$  or PM10 351-430  $\mu\text{g}/\text{cu. m.}$ )
- Stop use of diesel generator sets
  - Enhance parking fee by 3-4 times
  - Increase bus and Metro services
  - Apartment owners to discourage burning fires in winter by providing electric heaters during winter
  - Advisories to people with respiratory and cardiac conditions to restrict outdoor movement

##### **Moderate to poor**

24. (PM2.5 61-120  $\mu\text{g}/\text{cu. m.}$  or PM10 101-350  $\mu\text{g}/\text{cu. m.}$ )
- Heavy fines for garbage burning
  - Close/enforce pollution control regulations in brick kilns and industries
  - Mechanised sweeping on roads with heavy traffic and water sprinkling
  - Strictly enforce ban on firecrackers

## TOPIC 60. CANNABIS PLANT



1. Earlier this week, late actor Irrfan Khan's wife Sutapa Sikdar made an appeal to legalise CBD oil in India. Her appeal followed the criticism of actor Rhea Chakraborty after it was reported that she had administered CBD oil, used as a pain reliever for some, to Sushant Singh Rajput when he was alive. What is CBD oil? What are its effects? Is its use and consumption legal in India?

### **What is CBD oil?**

2. CBD oil is an extract from the cannabis plant. The two main active substances in it are cannabidiol or CBD and delta-9 tetrahydrocannabinol, or THC. The high that is caused by the consumption of cannabis is due to THC. CBD, however, does not cause a "high" or any form of intoxication. CBD oil is made by extracting CBD from the cannabis plant, then diluting it with a carrier oil like coconut or hemp seed oil.

### **What are the effects of Cannabidiol?**

3. Cannabidiol has effects on the brain, preventing the breakdown of a chemical that aggravates pain and affects mood, and mental function. It can reduce pain and anxiety. It also reduces psychotic symptoms associated with conditions such as schizophrenia as well as epilepsy.

### **How is CBD oil used?**

4. CBD is extracted from marijuana plants as either an oil or powder. These can be mixed into creams or gels. They can be put into capsules and taken orally, or rubbed on your skin. All topicals (cannabis-infused products) should be applied directly to the site of inflammation or pain to work in a specific area.

### **Is CBD oil helpful in the treatment of cancer?**

5. There is not enough robust scientific evidence to prove that CBD oil can safely and effectively treat cancer. A study from the European Journal of Pain showed that CBD applied on the skin could help lower pain and inflammation due to arthritis. CBD inhibits inflammatory and neuropathic pain associated with cancer. Studies have long shown that people who took marijuana extracts in clinical trials tended to need less pain medicine. The US-based National Cancer Institute says that CBD may help alleviate side-effects of cancer treatment.

### **Is CBD oil legal in India?**

6. The Narcotic Drugs and Psychotropic Substances Act, 1985 (NDPS Act) outlaws the recreational use of cannabis. The NDPS Act, however, does not apply to the leaves and seeds of cannabis plants. In case the CBD is extracted from the leaves of the cannabis, then technically it is not illegal. CBD oil manufactured under a licence issued by the Drugs and Cosmetics Act, 1940 can be legally used. However, the use of cannabis as a medicine is not much prevalent in India. The recent controversy about the use of drugs in Bollywood has further stigmatised the usage of CBD.
7. At the centre of the storm around the Narcotics Control Bureau's investigation into the alleged drug trafficking in connection with actor Rhea Chakraborty — **given bail by Bombay High Court on October 7** — following the death of actor Sushant Singh Rajput and what has now become an 'inquiry' aimed at "uprooting the drug citadel in Bollywood", is a plant that goes by many names: cannabis, hemp, marijuana or pot.
8. As potent as various parts of its anatomy may be, not all of them amount to criminality under the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985.

### **What is the cannabis plant?**

9. According to the World Health Organisation (WHO), cannabis is a generic term used to denote the several psychoactive preparations of the plant *Cannabis sativa*. The major psychoactive constituent in cannabis is Delta-9 tetrahydrocannabinol (THC). The Mexican name 'marijuana' is frequently used in referring to cannabis leaves or other crude plant material in many countries.

10. Most species of cannabis are dioecious plants that can be identified as either male or female. The unpollinated female plants are called hashish. Cannabis oil (hashish oil) is a concentrate of cannabinoids — compounds which are structurally similar to THC — obtained by solvent extraction of the crude plant material or of the resin.
11. The WHO says that cannabis is by far the most widely cultivated, trafficked and abused illicit drug in the world.

#### **How does the NDPS Act define cannabis?**

12. According to the NDPS Act “cannabis plant” means any plant of the genus cannabis. The legislation that was enacted in 1985 succeeded the Dangerous Drugs Act, 1930. It was introduced as lawmakers felt that the older legislation that entailed a maximum punishment of up to four years was not strict enough to check drug trafficking.
13. Under section 2 (iii), the Act defines cannabis (hemp). The sub-sections refer to parts of the plant that come under the purview of the Act.
14. ‘Charas’ is the separated resin extracted from the cannabis plant. The NDPS Act covers separated resin, in whatever form, whether crude or purified, obtained from the cannabis plant and also includes concentrated preparation and resin known as hashish oil or liquid hashish.
15. According to a 2018 WHO report by the Secretariat of the Expert Committee on Drug Dependence (ECDD), “The resin can resemble a resinous secretion of the plant, which is produced in the glandular trichomes, but also occurs as finer plant material, which appears as loose or pressed sticky powder, depending on the method of production.” Charas is also commonly called ‘hash’.
16. Section 2(iii)(b) of the NDPS Act defines ‘ganja’ as the flowering or fruiting tops of the cannabis plant but it clearly excludes the seeds and leaves, when not accompanied by the tops, by whatever name they may be known or designated. Street names for the drug include ‘weed’ and ‘marijuana’.
17. The Act also illegalises any mixture with or without any neutral material, of any of the two forms of cannabis – charas and ganja — or any drink prepared from it.

#### **Are substances made from cannabis leaves also illegal under the NDPS Act?**

18. No. As defined in the Act, the legislature left seeds and leaves of the cannabis plant out of the ambit of the NDPS Act.
19. The serrated leaves of the plant have negligible THC content. THC is the psychoactive or intoxicating compound present in the cannabis plant that is mainly responsible for giving consumers the ‘high’. ‘Bhang’, which is commonly consumed during festivals like Holi, is a paste made out of the leaves of the cannabis plant, and is hence not outlawed.
20. Similarly, CBD oil — an acronym for cannabidiol derived from the cannabis plant — that surfaced in the NCB’s investigation of WhatsApp chats between Sushant Singh Rajput’s talent manager Jaya Saha and Rhea Chakraborty, Saha’s lawyer said, would not come under the NDPS Act.
21. “Our research shows that CBD oil is made from the leaves of the cannabis plant and hence does not attract the NDPS Act,” said criminal lawyer Ayaz Khan, who represents Saha. The information on the bottle of the ‘CiBiDiUM’ brand of the oil that Saha suggested Rhea could give Rajput, stated that it contained no THC.
22. Khan also pointed out that the bottle does not bear the ‘NRx’ sign that prescription drugs that contain substances that may come under the NDPS Act, are required to have according to section 97(c) of the Drugs and Cosmetics Act that refers to labelling of medicines.

#### **Then why is the use of CBD oil still contentious in India?**

23. The NDPS Act does not permit the recreational use of cannabis in India. While CBD oil manufactured with a licence under the Drugs and Cosmetics Act, 1940 can be legally used, it is not very common. Some Indian websites do sell CBD oil with a prescription and many even facilitate it.
24. Former head of the psychiatry department at AIIMS, Dr Sudhir Khandewal said, “Some states in the US have legalised CBD oil but we do not prescribe it here. Cannabis content is very low and it has very low THC and has no addictive properties. More than anxiety and depression, it has been found useful in cancer treatment like in multiple myeloma. For associated symptoms of cancer it has been found useful. There have been several discussions on this. Cannabis is mired in so much controversy. It should not have been in the NDPS Act, but unfortunately, it is.”
25. “We are still struggling with drugs to treat cancer and mental illnesses and so claims are made by everybody and people also want to try it. CBD also has a non-specific recommendation. People think it will at least have a ‘feel good’ factor or cheer up the person,” he said.
26. Medical practitioners said many people suffering from anxiety and depression are known to buy it legally in the US and bring it back to India for personal use in small quantities.

## TOPIC 61. CHINA'S CLIMATE COMMITMENT



1. It's that time of the year when countries start preparing for negotiations at the year-ending UN climate change conference. This year, the conference is not happening because of the pandemic.
2. But last week, China made an unexpected announcement that ensured that there was no lack of climate change excitement this season. Speaking at the UN General Assembly, Chinese President Xi Jinping made two promises that came as a welcome surprise to climate change watchers.

### **What has China announced?**

3. First, Xi said, China would become carbon net-zero by the year 2060. Net-zero is a state in which a country's emissions are compensated by absorptions and removal of greenhouse gases from the atmosphere. Absorption can be increased by creating more carbon sinks such as forests, while removal involves application of technologies such as carbon capture and storage.
4. Second, the Chinese President announced a small but important change in China's already committed target for letting its emissions "peak", from "by 2030" to "before 2030". That means China would not allow its greenhouse gas emissions to grow beyond that point. Xi did not specify how soon "before 2030" means, but even this much is being seen as a very positive move from the world's largest emitter.

### **Why is net-zero an important target?**

5. For the last couple of years, there has been a concerted campaign to get countries, especially the big emitters, to commit themselves to achieve "climate neutrality" by 2050. This is sometimes referred to as the state of net-zero emissions that would require countries to significantly reduce their emissions, while increasing land or forest sinks that would absorb the emissions that do take place. If the sinks are not adequate, countries can commit themselves to deploying technologies that physically remove carbon dioxide and other greenhouse gases from the atmosphere. Most of such carbon dioxide removal technologies are still unproven and extremely expensive.
6. Scientists and climate change campaign groups say global carbon neutrality by 2050 is the only way to achieve the Paris Agreement target of keeping global temperatures from rising beyond 2°C compared to pre-industrial times. At the current rate of emissions, the world is headed for a 3° to 4°C rise in temperatures by 2100.

### **How significant is China's commitment?**

7. China is the world's largest emitter of greenhouse gases. It accounts for almost 30% of global emissions, more than the combined emissions in the United States, the European Union and India, the three next biggest emitters. Getting China to commit itself to a net-zero target, even if it is 10 years later than what everyone has in mind, is a big breakthrough, especially since countries have been reluctant to pledge themselves to such long term commitments.
8. So far, the European Union was the only big emitter to have committed itself to a net-zero emission status by 2050. More than 70 other countries have also made similar commitments but most of them have relatively low emissions because of which their net-zero status would not help the planet's cause in a big way. The real heavyweights whose climate actions are crucial to achieving the Paris Agreement targets are the Big Four — China, the US, the European Union and India — who together account for more than half the global emissions, followed by countries such as Russia, Brazil, South Africa, Japan and Australia.

9. A week earlier, South Africa declared its intention to become carbon-neutral by 2050, but other countries have been holding back. The United States, under the Donald Trump administration, has walked out of the Paris Agreement, and does not even believe in these targets.

#### **What is India's commitment?**

10. India has resisted pressure to make a long-term commitment, citing the fact that developed countries had utterly failed in keeping their past promises, and never delivered on the commitments they made earlier. India has also been arguing that the climate change actions it has been taking are, in relative terms, far more robust than those of the developed countries.
11. Until now, China had been making more or less similar arguments as India. The two countries have historically played together at the climate change negotiations, even though vast differences have emerged in their emissions and development status in the last couple of decades.
12. Therefore, China's decision is a big shot in the arm for the success of Paris Agreement. According to Climate Action Tracker, a global group that offers scientific analysis on actions being taken by countries, the Chinese goal, if realised, would lower global warming projections for 2100 by about 0.2° to 0.3°C, the most impactful single action ever taken by any country.

#### **So, what are the implications of China's commitment for India?**

13. The Chinese announcement is naturally expected to increase pressure on India to follow suit, and agree to some long-term commitment even if it was not exactly 2050 net-zero goal. That is something that India is unlikely to do.
14. "It is the wrong kind of demand being put on us. In fact, if you look at the pledges that have been made in the Paris Agreement, India is the only G20 country whose actions are on track to meet the 2° goal. The other developed countries actually have to make efforts towards a 1.5° world, but they are failing even to do enough to meet the 2° target. So, yes, there would be enhanced pressure, and we will have to deal with it. But it is an unfair demand, and we will have to resist it as we have been doing all along," said Ajay Mathur, head of Delhi-based The Energy and Resources Institute.
15. Mathur's contention is corroborated by Climate Action Tracker as well, which puts India's actions as "2°C compatible", while the US, China and even the European Union's current efforts are classified as "insufficient".
16. Earlier this year, India was in the process of formulating a long-term climate policy for itself, but that effort seems to have been shelved as of now.
17. Another side-effect of the Chinese decision could be an increased divergence in the positions of India and China at the climate negotiations. China might now have fewer grounds to align itself with India as a developing country.

## TOPIC 62. LEOPARD CAPTURE

1. A study conducted across Karnataka indicates that the policy guidelines brought out by government to mitigate human-leopard conflict and discourage translocation of the animal have had little impact on the ground.
2. The number of leopards captured per month increased more than threefold (from 1.5 to 4.6) after the human-leopard policy guidelines were brought out in 2011. Similarly, there was a threefold increase in the number of leopards translocated per month (from 1 to 3.5).
3. Sanjay Gubbi of the Nature Conservation Foundation, who led the study in the State, said the guidelines for human-leopard conflict management were brought out in April 2011 to reduce conflict with leopards, discourage their translocation, and suggest improved ways of handling emergency conflict situations.
4. In Karnataka, 357 leopards were in conflict situations and were captured between 2009 and 2016, and outcome was available in case of 314 leopards. Of these, 268 were translocated in contravention of spirit of policy, 34 were captured and kept in captivity, while 12 died during capture.
5. These findings have been published in a paper, 'Policy to on-ground action : Evaluating a conflict policy guideline for leopards in India', in Journal of International Wildlife Law and Policy.
6. Taking Karnataka as a case study, researchers analysed pre- and post-guidelines leopard captures, reasons for captures, and outcome for captured leopards.

### Protected areas

7. The study found that out of 357 leopards captured across 23 of 30 districts in State during 2009-16, a majority (79%) occurred in Mysuru, Udipi, Hassan, Tumakuru, Ramanagaram, Ballari, Koppal, and Mandya districts.
8. Of 268 leopards translocated, many were moved to protected areas (59.7%) and some to reserved / State / minor forests (29.8%). The highest number of translocations occurred into the Bandipur Tiger Reserve (22.5%), followed by Nagarahole Tiger Reserve (20.6%) and the Cauvery Wildlife Sanctuary (15%).
9. Study says that of 80 leopards translocated to Reserved/State/Minor Forests most release were to Kemphole Reserved Forest (16.2%), followed by Devarayanadurga State Forest (7.5%) and Bukkapatna State Forest (5%).
10. Though eight reasons were attributed to capture and translocation of leopards, main justification was livestock depredation (38.1%).

### SPOTTING LEOPARDS

India has conducted its first leopard census and come out with a count of the feline species this month. Leopards are found pan-India, except deserts and the marshy Sunderbans, unlike the other big cats. Here's knowing leopards better without getting too close to them



**India is the only country in the world to boast of five big cat species: the lion, tiger, Indian leopard, snow leopard and the clouded leopard**

**Indian leopard**  
**Status** | Near threatened. It is also called the common leopard. According to WWF, "within the 17 tiger-bearing states, the leopard occupies nearly double the area occupied by tigers"

**Fast facts**

- > Leopards don't need much water. They survive from the moisture they get from eating their prey
- > Leopards are great hunters and can run at a speed of 58kmph, jump forward 20 feet and leap 10 feet straight up
- > Leopards are able to climb trees, even when carrying heavy prey. One reason why they sometimes take their prey up in the trees is to ensure lions or hyenas can't steal them
- > Leopards can hear up to five times better than the average human
- > Though classified as a roaring cat, leopards usually bark when they have something to say
- > A leopard's spots are called rosettes because they look like roses. Their pattern is unique for every individual leopard, much like a human's fingerprints
- > Black panthers actually leopards with melanism — wherein the entire coat of the animal, including the spots, is black — and not separate species as they are widely believed to be

**Wild Love**  
During the National Geographic programme, '**Eye of the Leopard**', a wild leopard killed a baboon in order to feed herself. However, upon noticing an infant baboon clinging to the dead baboon, the leopard amazingly carried the infant up to the safety of the tree to guard her from hyenas. She groomed and cuddled the baby throughout the night, caring for him/her as she would her own cub



## TOPIC 63. NATIONAL BUTTERFLY

1. A citizen campaign to drum up support for identifying a national butterfly has gained momentum with close to half a lakh people joining the movement from across the country.
2. Spearheaded by butterfly researchers, scientists and enthusiasts, the National Butterfly Campaign has revived focus on the relevance of the charming, scaly winged insects in enhancing biodiversity.
3. Kalesh Sadasivan, research associate, Travancore Nature History Society, points out that India is yet to designate a national butterfly despite being home to over 1,300 species belonging to six butterfly families.
4. Several countries, including Malaysia, Taiwan, Indonesia and Bhutan, have national butterflies.
5. As part of identifying butterfly species that could make it to the coveted status, the National Butterfly Campaign Consortium prepared a long-list of 50 butterflies that was further trimmed to seven.

### Key contenders

6. Krishna Peacock (*Papilio krishna*), Indian Jezebel or Common Jezebel (*Delias eucharis*), Orange Oakleaf (*Kallima inachus*), Five-bar Swordtail (*Graphium antiphates*), Indian Nawab, Yellow Gorgon and Northern Jungleequeen (*Stichophthalma camadeva*) are the contenders for the premier position.
7. A country-wide online poll that commenced on Sep 11 to identify most-favoured butterfly species has currently generated 42,090 votes, with Maharashtra recording highest number — 16,210. Several people have also cast their votes in West Bengal (3,029) and Karnataka (2,435), while 786 from Kerala have also joined campaign.

Pic: S. S. Shanth Kumar

### BOTANICAL GARDEN NOW HOST TO FORTY BUTTERFLY SPECIES

**18,000**  
species of butterflies exist worldwide

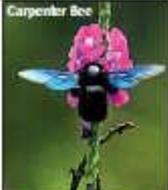
**1,500**  
are found in the Indian subcontinent

**170**  
are present at the Sanjay Gandhi National Park

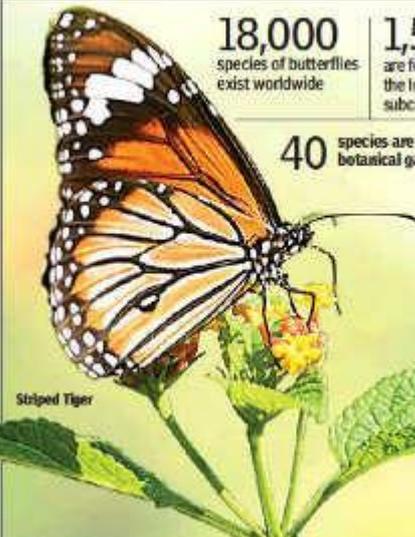
**40** species are harboured by Byculla zoo's botanical garden



Common Sailor



Carpenter Bee



Striped Tiger

**Adult** | The reproductive stage. 2-6 weeks. Some large species may live for up to 8 months

**LIFE CYCLE**

**Egg** | Laid on leaves by adult female butterfly. 4 days

**Larva, or caterpillar** | The feeding stage. 2 weeks

**Pupa** | The transition stage. 10 days

**Conservationists** Shubhada Nidhae and Natolsi Rustomam helped create the butterfly park

**DID YOU KNOW?**

- > The colors and patterns a butterfly sees are invisible to humans
- > To a butterfly, the colour patterns on its own wings appear much different than what is perceived by humans
- > This is because butterflies can see ultraviolet light

### WINGED WONDERS

Common Jezebel, Orange Oakleaf and Common Nawab butterflies which are in the race for the privileged 'national butterfly' tag are unique to AP's Papikondalu National Park





## TOPIC 64. MANGROVE MIGRATION

1. In 2008, Punarbasu Chaudhuri, mangrove ecologist from University of Calcutta spotted an interesting mangrove plant at bank of river Hooghly inside Kolkata city. It was quite unusual, as mangroves require a cyclic supply of saline water, and this growth at an upstream zone was remarkable. He then started an investigation on their distribution in Hooghly estuary, and his recent paper suggests that the mangroves have started moving upstream, growing in less-saline regions.

### Redistributing plants

2. After surveying the banks near Kolkata, he was able to spot a few mangroves belonging to *Sonneratia*. He says that over the years due to gradual environmental changes and anthropogenic activities, mangroves have started to redistribute. The paper, published in *Marine Pollution Bulletin*, notes that they have reclaimed even the upper course of the river, which was completely devoid of mangroves before 1995.
3. His team spent years mapping the distribution of mangroves and associated species using ground surveys and satellite data. They also studied the sediments and water samples along the river banks. "Sewage disposal has increased the pollution load in the river waters. Globally, there is also rapid mean sea-level rise. All these might have played a role in this upstream migration,".

### Associates found

4. Between Barrackpore and Birlapur, in a non-saline region, about 239 mature trees and numerous saplings of *Sonneratia caseolaris* (commonly known as mangrove apple) have grown naturally. They were just four to five years old with fruits and flowers, exhibiting luxuriant growth. The team also found the redistribution of several other mangrove associate trees, shrubs and climbers in that region.
5. "This is not welcome news. They directly indicate changes in the micro-environment. The rate of sedimentation, quality of the sediment and biogeochemistry of the river has all been affected by elevated anthropogenic activities and global climate change events,".

### Change in ecology

6. The team emphasised the fact that the construction of Farakka Barrage in 1975 has increased fresh water flow in River Hooghly, thereby causing change in ecology and chemistry of the river.
7. They also found high chemical oxygen demand in the river because of increased release of harmful chemicals from multiple point and non-point sources. Studies from China have shown that *Sonneratia caseolaris* grow well in the presence of high chemical oxygen demand of water.
8. "This shows the potential of *Sonneratia caseolaris* to act as a bio-indicator of regional environmental changes. The decline in the mangrove area along with this migration may increase the amplitude of coastal hazards such as storm surges, erosion and flooding. More studies are needed to understand in detail this new horizon of mangrove adaptation and dispersion ecology. We are also planning to study more rivers in this region,".

**Mangroves**  
Extraordinary tropical forests that grow at the edge of the land and sea, which are also rare and increasingly threatened.

**30-50%**  
of mangrove forests have been lost due to shrimp farming, tourism, intrusive coastal development and other factors.

Mangroves are home to many **Endangered Species**

**Benefits of Mangroves**

- They prevent erosion and stabilize shorelines.
- They reduce wave height by up to 66% during storm events.
- They provide habitat for up to 80% of commercially and recreationally important fish species.
- They improve water quality and clarity.
- They provide privacy and shade for coastal property owners.

**Threats to Mangroves**

- DEFORESTATION
- POLLUTION
- CLIMATE CHANGE

**HELP PROTECT MANGROVES**

Plant a Mangrove tree and stop the destruction, of our Mangrove and the animals that inhabit them. By protecting trees you are protecting your family, your food, your health and your wealth.

For more info please write to [info@friendofthesea.org](mailto:info@friendofthesea.org) or check [www.friendofthesea.org](http://www.friendofthesea.org)

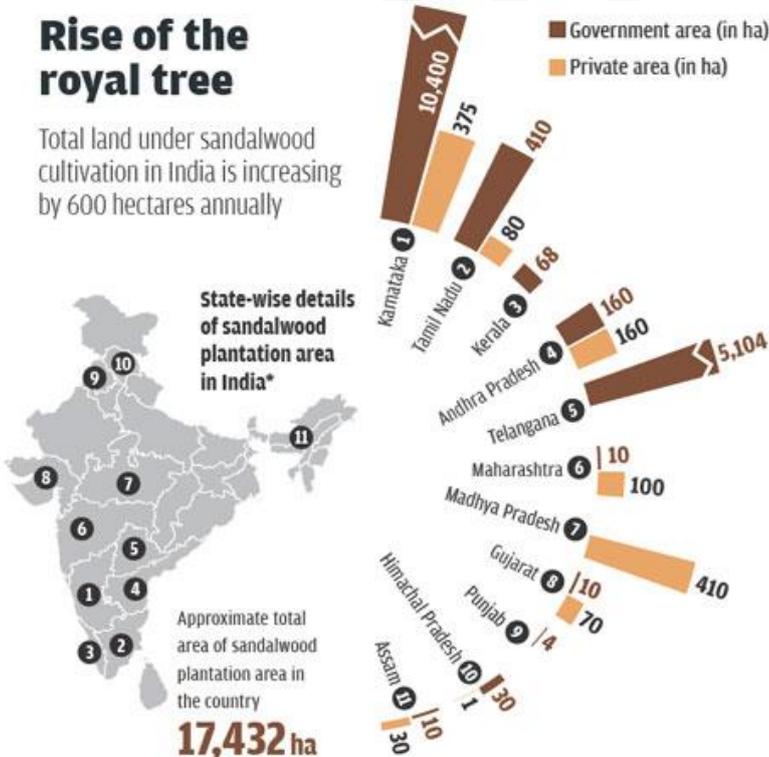
For more info please write to [info@friendoftheearth.org](mailto:info@friendoftheearth.org) or check [www.friendoftheearth.org](http://www.friendoftheearth.org)

## TOPIC 65. SANDALWOOD FORESTS

1. India's sandalwood trees, the country's pride — particularly of Karnataka — are facing a serious threat with the return of the destructive Sandalwood Spike Disease (SSD).
2. The infection has resurfaced in the aromatic tree's natural habitats in Karnataka and Kerala.
3. According to a study by scientists R. Sundararaj and R. Raja Rishi of the Bengaluru-based Institute of Wood Science & Technology (IWST), the natural population of sandalwood in Marayoor of Kerala and various reserve forests in Karnataka, including MM Hills, are heavily infected with SSD for which there is no cure as of now. Presently, there is no option but to cut down and remove the infected tree to prevent the spread of the disease, caused by phytoplasma — bacterial parasites of plant tissues — which are transmitted by insect vectors.
4. With between 1 and 5% of sandalwood trees lost every year due to the disease, scientists warn that it could wipe out the entire natural population if measures are not taken to prevent its spread. Also, they fear that any delay in arresting the trend may result in the disease spreading to cultivated sandalwood trees.
5. SSD has been one of major causes for decline in sandalwood production in India for over a century. Disease was first reported in Kodagu in 1899. More than a million sandalwood trees were removed in Kodagu and Mysuru region between 1903 and 1916, prompting Maharaja of Mysuru to announce a reward in 1907 of ₹10,000 for anyone finding a remedy. Later 98,734 trees were extracted during 1917-1925 in Salem also due to SSD.
6. Such was the impact of this disease in Karnataka that the growing stock had been reduced to 25% of its initial level between 1980 and 2000. The devastating impact in natural habitats resulted in sandalwood being classified as "vulnerable" by the International Union for Conservation of Nature in 1998.
7. The present rapid spread of the infection is largely due to restrictions on green felling in forests, which has allowed vectors to spread the disease to healthy trees, says the IWST study.
8. Dr. Sundararaj observes that presently it is very difficult to identify the symptoms of SSD. "It can be noticed only when the tree gets completely affected," he says.
9. In an effort to combat the killer disease, the IWST will join hands with the Pune-based National Centre for Cell Sciences for a three-year study, initiated by the Union Ministry of Ayush with a financial allocation of ₹50 lakh.

### Rise of the royal tree

Total land under sandalwood cultivation in India is increasing by 600 hectares annually



### INDUSTRIES DEPENDING ON SANDALWOOD OIL

Sandalwood oil is distilled from the heartwood and roots of the sandalwood tree. It is one of the most valuable essential oils. Below are the quantities of sandalwood that major industries use:



## TOPIC 66. LANTANA

1. A special drive to uproot the invasive lantana bushes in the famous Sajjangarh wildlife sanctuary in Rajasthan's Udaipur district has helped in ecological restoration of grasslands and saved biodiversity. The month-and-a-half-long campaign was accompanied by the plantation of native species on the cleared patches of land.

### 'Mission lantana'

2. Small sanctuary in southern Aravalli hills, spread over 5.19 sq. km, is home to many herbivores. Lantana camara, a thicket forming shrub, has covered vast tracts of land in sanctuary, stopping natural light and nutrition for flora and fauna.
3. The toxic substance in its foliage and ripe berries affected the animals, while its expansion stopped the natural growth of grass and other shrubs. With the herbivores not getting sufficient forage, the prey base for carnivorous animals was declining, leading to ecological disturbances in the food chain.
4. The "mission lantana" was taken up last month at the instance of a senior woman police officer who noticed an unease among the herds of spotted deer with the gradual shrinking of their natural habitat. Inspector General of Police discussed matter with wildlife experts and initiated action to get rid of lantana bushes, which had taken over almost 50% of sanctuary.
5. The drive involved collective efforts and 'shram daan' (voluntary physical work) by the forest officials, police personnel, wildlife lovers, representatives of voluntary groups and local villagers. The volunteers used hand gloves and an equipment, monkey jack, for removing the toxic flowery shrubs.
6. After 45 days, about 10 hectares of land has been cleared. Forest Department, which has planted over 500 saplings in cleared pockets, plans to take up sowing of grass and a variety of alternate plant seeds as vegetation useful for herbivores.
7. Drive should be taken up in rainy season for next three to four years to make a permanent impact. "Correct ecological approach would be removal from top to bottom in hilly areas and centre to periphery in plains."
8. Lantana, first introduced in 1807, had spread to wildlife reserves, river banks and Project Tiger areas where it had obliterated native grass and reduced biodiversity. In some regions, plant has made inroads into pastures and shrunk cattle grazing areas, affecting livelihood of villagers. Natural grass has started growing in Sajjangarh sanctuary and spotted deer and other herbivores can be seen foraging on vegetation.



*Lantana camara* L.  
lantana

Click on a scientific name below to expand it in the PLANTS Classification Report.

Rank	Scientific Name and Common Name
Kingdom	Plantae - Plants
Subkingdom	Tracheobionta - Vascular plants
Superdivision	Spermatophyta - Seed plants
Division	Magnoliophyta - Flowering plants
Class	Magnoliopsida - Dicotyledons
Subclass	Asteridae
Order	Lamiales
Family	Verbenaceae - Verbena family
Genus	<i>Lantana</i> L. - lantana
Species	<i>Lantana camara</i> L. - lantana

## TOPIC 67. FLOOD INUNDATION MAPPING

1. Kerala rains of July-Aug 2018 caused substantial loss of lives and property and left major cities flooded for days.
2. Maps showing where flooding may occur or flood inundation maps can help in better flood risk preparedness. Using openly accessible satellite data and a cloud computing platform, an international team has now developed a powerful tool for a near real-time mapping of flood extent. The paper published in PLOS ONE notes the new flood inundation maps showed an accuracy of over 94%. Space-based sensors known as synthetic aperture radar (SAR) have been used widely for monitoring and mapping of flood-water inundation. SAR is capable of acquiring data in all-weather condition, making it useful for mapping and monitoring flood inundation areas.

### Copernicus programme

3. These sensors operate on the constellation of two SAR satellites belonging to the Copernicus Programme launched by the European Space Agency.
4. The data from the satellites was utilised on a cloud-based platform known as Google Earth Engine (GEE) for the rapid processing of big data. The GEE also has publicly made available numerous satellite image collections and has functions for image processing and analysis.
5. The team studied water inundation maps from 2015 and their analysis was clearly able to show the areas submerged underwater in 2018. "Once you have the data, it just takes a few minutes as you can apply machine learning and computer vision techniques to quickly generate the water inundation maps. This can help swiftly deploying the rescue team and rescue operations can be started immediately," explains Varun Tiwari, Remote Sensing and Geoinformation Analyst from the International Centre for Integrated Mountain Development, an intergovernmental organisation based in Kathmandu, Nepal. He is the first and corresponding author of the work.

### Future floods

6. The team also analysed the rainfall data from 1981 to 2018 and were able to predict the major reasons behind this flood. "The monsoon season of Kerala has seen an increasing rainfall trend and this has played a major role. This also depicts that more floods are likely to happen in the near future," adds Tiwari. "Other studies have also pointed out that the flooding event would have not taken place if the capacity of the major six reservoirs would have been 34% more."



## TOPIC 68. FAUNA LIST

1. A study conducted by researchers from Wildlife Institute of India, Dehradun, on amphibians in the central Indian Panna Tiger Reserve has come up with a list of five species hitherto undocumented in this region. The researchers, apart from compiling an entire amphibian inventory of this region, have recorded a call library of eleven species and also have obtained molecular confirmation (through DNA) of the cryptic species – a term used to refer to species that appear the same but show up a difference when their DNA is examined.

### Cryptic species

2. “We need multiple techniques to correctly identify [cryptic species]. So there may be two very similar looking frogs. In the field we may mistakenly think they are one, but they may have completely different ‘calls’ or they be quite different genetically,”.
3. Of five species that group has added to faunal list of Madhya Pradesh are dwarf toad found in peninsular India; Odisha paddy frog, an inhabitant of eastern India; wrinkled cricket frog, earlier observed in Karnataka; Pierre’s cricket frog, seen in Nepal, Bhutan and Assam; and western burrowing frog, earlier seen in western India.
4. Since Central India is dry, amphibians are spotted only during the monsoons (late June to early August).
5. In this window, team spent 86 days over two years to study area.
6. “We used to locate breeding aggregation of frogs following their ‘chorus’. Then we sit quietly at least 1 metre away from frog with our call recording devices and make effort to record their complete call,”. Sometimes they had to repeat measurements as frogs were very tricky to identify.

### First acoustic data

7. Among the achievements of the group is recording the advertisement calls of the western burrowing frog for the first time. This frog was identified for the first time in 2017 from populations in Gujarat, Maharashtra and Karnataka. “We have recorded 30 calls from three males which becomes the first acoustic data for this species,”.
8. Among the total of 15 species studied by the group, 12 are frogs and three are toads.



Name of National Park	Area	Location	Established	Fauna
Kanha National Park	940 km <sup>2</sup>	Mandla	1955	Tiger, panther, gaur, chital, sambar, nilgai, chinkara, barking deer, swamp deer, (barasingha), wild boar and a variety of upland birds.
Bandhavgarh National Park	437 km <sup>2</sup>	Umaria	1968	Tiger, panther, gaur, chital, sambar, nilgai, chinkara, barking deer, wild boar and a variety of upland birds.
Madhav National Park	354 km <sup>2</sup>	Shivpuri	1959	Panther, chital, sambar, nilgai, chinkara, blackbuck, chausingha, wild boar, crocodiles in lake, and a variety of upland birds.
Sanjay National Park	467 km <sup>2</sup>	Sidhi	-	Tiger, panther, sambar, chital, gaur, etc.
Van Vihar National Park	4.45 km <sup>2</sup>	Bhopal	1983	Tiger, panther, lion, bear, hyena, etc.
Panna National Park	543 km <sup>2</sup>	Panna, Chhatarpur	-	Tiger, chital, chinkara, sambar and sloth bear.
Satpura National Park	524 km <sup>2</sup>	Pachmarhi	1981	Tiger, leopard, sambar, chital, bherki, nilgai, four-horned antelope, chinkara, bison (gour), wild boar, wild dog, bear, blackbuck, fox, porcupine, flying squirrel, mouse deer, Indian giant squirrel, etc.
Pench National Park	293 km <sup>2</sup>	Seoni, Chhindwara	1983	Tiger, panther, bison, chital, sambhar, nilgai, chinkara, barking deer, chowsingha, wild boar and a variety of upland birds.
Mandla Plant Fossils National Park	0.27 km <sup>2</sup>	Mandla	-	Plant fossils

## TOPIC 69. KUMBH MELA 2021



### **The mythology behind Kumbh**

1. Kumbh is one of the most sacred pilgrimages for Hindus. According to information shared on a website on Kumbh hosted by Uttar Pradesh's Prayagraj Mela Pradhikaran, the founding myth of the Kumbh Mela points to the *puranas* (compilation of ancient legends). It recounts how gods and demons fought over the sacred *kumbh* (pitcher) of *amrit* (nectar of immortality) called the Ratna of Samudra Manthan. It is widely believed that Lord Vishnu (disguised as the enchantress 'Mohini') whisked the *kumbh* out of the grasp of the covetous demons who had tried to claim it. As he took it towards heaven, a few drops of the precious nectar fell on four sacred sites, which we now know as Haridwar, Ujjain, Nashik and Prayag. The flight and the following pursuit is said to have lasted 12 divine days, which is equivalent to twelve human years, and therefore, the mela is celebrated every 12 years, staggered at each of the four sacred sites in this cycle. The corresponding rivers are believed to have turned into *amrit* at the cosmic moment, giving pilgrims the chance to bathe in the essence of purity, auspiciousness, and immortality.

### **The importance of Kumbh 2021 for Uttarakhand**

2. Religious tourism is the backbone of Uttarakhand's economy. The lockdown imposed due to the Covid-19 pandemic has given the hill state's tourism sector a major jolt.
3. The annual pilgrimage of Char Dham Yatra resumed late and with restrictions. The annual Kanwar Yatra could not happen due to the pandemic. And now, the Kumbh Mela 2021, which is to be held from January 1 to April 30, is a hope of revival for the people associated with the sector, says Seema Nautiyal, Haridwar District Tourism Officer.
4. There are over 800 hotels and 350 ashrams in Haridwar where preparations are underway to accommodate an average 1.25 lakh pilgrims on any given day during the Kumbh. The tourism department was earlier expecting around 10 crore pilgrims, but restrictions imposed to ensure social distancing will curtail the figure. As 156-sq km 'mela area' has been demarcated in three districts of Haridwar, Dehradun and Pauri Garhwal for people associated with hospitality, tourism and civil supply in these districts, and adjoining areas of western Uttar Pradesh, to get business during the religious congregation.

### **Preparations for the Kumbh Mela 2021**

5. Hundreds of labourers have been working on permanent infrastructure, laying of sandstone at the ghats of Har Ki Pauri and shifting overhead power cables underground to give the area a facelift. A total of 51 construction

projects which will be permanent in nature are underway in the mela area. A few projects had started in August 2019, but most began in January 2020. Lockdown had halted the progress for a few weeks after which is resumed in the first unlock.

6. According to Mela Officer Deepak Rawat, projects worth Rs 320 crore are going on, with December 15 as the deadline to complete them. Rawat claims 70 per cent of the work has been completed. This includes seven bridges, various new roads, astha path, upgradation of police barracks, fire stations and bus station and facelifts of various ghats.

#### **How Kumbh 2021 is different from the past**

7. First, the schedule has changed. Kumbh is celebrated once in 12 years and the previous kumbh in Haridwar was held in 2010. The next one was to be held in 2022, but is happening a year earlier.
8. "After more than 100 years the kumbh will be held earlier. It is happening because of specific auspicious dates," said Mahant Narendra Giri, head of Akhil Bharatiya Akhara Prishad, who attended various meetings chaired by Chief Minister Trivendra Singh Rawat on the preparations.
9. Second, crowd management will be tackled differently due to Covid-19. For taking a holy dip in the Ganga on the dates of four Shahi Snans (March 11, April 12, April 14 and April 27), pilgrims will have to register on a website and select a specific ghat to bathe. Each pilgrim will be allotted a specific time to visit the ghat, and will be allowed to bathe only for 15 minutes. The route map of the selected ghat will also be provided on the e-pass.
10. The mela area and all 107 ghats too have been marked as red, green and yellow zones, according to vulnerability. GIS mapping of the entire area has been done, and if there is crowding at any particular site above the permissible limit, the control room will receive an alert that will be relayed to security force teams available nearby. The crowd capacity of each ghat has also been assessed. Further, since, in the past, stampedes have occurred in the morning or forenoon as people rush to bathe, the administration will increase the time duration to reduce crowd density during these hours.
11. IG, Kumbh Mela, Sanjay Gunjyal said the portal system will be for Shahi Snans days when the maximum crowd turns up to take a holy dip, and pilgrims will have to produce a pass at the border. Gunjyal said the strategy can be changed further in view of the pandemic.
12. A staggering seven million devotees attended the last Kumbh Mela in Haridwar in 2010. Officials said the grandness can be attested by the fact that there were 1.5 crore people in the mela area on April 14, 2020 — one particular date of shahi snan.
13. It is also expected that pilgrims will be able to bathe in cleaner water in the Ganga this year. While inaugurating various projects related to Namami Gange mission in Uttarakhand via video conferencing recently, Prime Minister Narendra Modi said that as it was experienced by the pilgrims at Prayagraj Kumbh, the visitors to Haridwar Kumbh would also experience the clean and pure status of the River Ganga in Uttarakhand.
16. Depending on what position the Sun, Moon, and Jupiter hold in that period in different zodiac signs, the venue for Kumbh Mela is decided. The calculations have been provided below for information:
  - a. **Kumbh Mela at Allahabad**
    - i. when Jupiter is in Aries or Taurus and Sun and Moon are in Capricorn during the Hindu month of Magha (January-February).
  - b. **Kumbh Mela at Haridwar**
    - i. when Jupiter is in Aquarius and Sun is in Aries during the Hindu month of Chaitra (March-April).
  - c. **Kumbh Mela at Ujjain**
    - i. when Jupiter is in Leo and Sun is in Aries, or when all three are in Libra during the Hindu month of Vaisakha (April-May).
  - d. **Kumbh Mela at Nasik**
    - i. when Sun and Jupiter are in Leo during the Hindu month of Bhadrprada (August-September).

**TOPIC 70. NOBEL LITERATURE PRIZE**

1. American poet Louise Gluck won the 2020 Nobel Literature Prize on Thursday, an unexpected choice known for themes of childhood and family life that draw inspiration from myths and classical motifs.
2. Ms. Gluck, 77, was honoured “for her unmistakable poetic voice that with austere beauty makes individual existence universal,” the Academy said.
3. Ms. Gluck won the Pulitzer Prize in 1993 for her collection *The Wild Iris* and the National Book Award for her latest collection, *Faithful and Virtuous Night*, in 2014.
4. Ms. Gluck was not seen as a favourite for the Nobel in the run-up to Thursday’s announcement. The chair of the Academy’s Nobel committee, Anders Olsson, lamented that she was not more well-known, “at least outside the US’ borders”, and had not been translated into many other languages.
5. She is the fourth woman to win the Nobel Literature Prize in the past decade — after Olga Tokarczuk, Svetlana Alexievich and Alice Munro — and only the 16th since the Nobel prizes were first awarded in 1901.
6. A professor of English at Yale University, Ms. Gluck “seeks the universal, and in this she takes inspiration from myths and classical motifs, present in most of her works,” the Academy said in its prize citation.
7. “The voices of Dido, Persephone, and Eurydice — the abandoned, the punished, the betrayed — are masks for a self in transformation, as personal as it is universally valid.”

**Natural tone**

8. Her collections *Triumph of Achilles* (1985) and *Ararat* (1990) address “almost brutally straightforward images of painful family relations”, jury said, noting that her use of a “deceptively natural tone is striking”, with “no trace of poetic ornament.”
9. Ms. Gluck is also a poet of radical change and rebirth, describing in her poem *Snowdrops* the miraculous return of life after winter, her work often marked by “humour and biting wit”.
10. The jury said her 2006 collection *Averno* was a “masterly collection, a visionary interpretation of the myth of Persephone’s descent into Hell in the captivity of Hades, the god of death.”



## TOPIC 71. NOBEL PEACE PRIZE 2020



1. On Friday, Norwegian Nobel Committee decided to award Nobel Peace Prize 2020 to the United Nation's (UN) World Food Programme (WFP) for its efforts to combat hunger and for its contribution to bettering conditions for peace in conflict-affected areas and for preventing the use of hunger being weaponised in war and conflict.

### **About the Nobel Peace Prize**

2. In his will, signed by Alfred Nobel on November 27, 1895, he mentioned that one part of his fortune that went towards Nobel Prizes would be dedicated to “person who shall have done most or best work for fraternity between nations, for abolition or reduction of standing armies and for holding and promotion of peace congresses”.
3. Nobel Peace Prizes have been awarded since 1901 and was not awarded on 19 occasions including 1914-1916, 1918, 1939-1943 among some other years.
4. This is because statutes of Nobel Foundation mention, “If none of works under consideration is found to be of importance indicated in first paragraph, prize money shall be reserved until following year. If, even then, prize cannot be awarded, amount shall be added to Foundation's restricted funds.” Therefore, fewer awards were given during two World Wars.
5. Overall, prize has been awarded to 135 laureates, including 107 individuals and 28 organisations. The Office of United Nations High Commissioner for Refugees has been awarded the prize twice.
6. So far, the youngest laureate is Malala Yousafzai, who was 17 years old when she won in 2014 and the oldest recipient was Joseph Rotblat who was given the award at the age of 87 in 1995.

### **So what is the UN WFP and why did it win the prize?**

7. The WFP, which was established in 1961 at the behest of the US president Dwight Eisenhower, is the world's largest humanitarian organisation (certified as the largest by the Guinness World Records in 2002) committed towards its global goal of ending hunger by the year 2030. Eisenhower proposed to the UN General Assembly on September 1, 1960, that a, “workable scheme should be devised for providing food aid through the UN system.”
8. In 2015, eradication of world hunger became one of UN's Sustainable Development Goals (SDGs) and WFP is UN's primary instrument in achieving that goal. Other UN agencies that work towards providing food security include World Bank, Food and Agriculture Organisation (FAO) and International Fund for Agricultural Development (IFAD).
9. Other UN SDGs include ending poverty, gender equality, clean water and sanitation, providing quality education and affordable and clean energy among others.
10. WFP was awarded peace prize “for its efforts to combat hunger, for its contribution to bettering conditions for peace in conflict-affected areas and for acting as a driving force in efforts to prevent use of hunger as a weapon of war and conflict.”
11. WFP runs entirely on public donations and was able to raise over \$8 billion last year. Its donors include governments, corporations and individuals.

### **How does WFP help people?**

12. WFP provides food assistance in two ways, either by way of providing food or by meeting people's food-needs by providing cash-based transfers. The cash-based transfers were launched for the first time in 2005 in response to the tsunami in Sri Lanka.



13. In 2019, WFP provided assistance to close to 100 million people spread across 88 countries by supplying them with over 4.2 million metric tonnes of food and \$1.2 billion in cash and vouchers.
14. In 1962, the WFP undertook its first emergency operation after an earthquake in Iran killed over 12,000 people; in 1963, the organisation launched its first development programme in Sudan.
15. In 1989, WFP staged the largest humanitarian airdrop in history involving 20 cargo aircraft when it launched "Operation Lifeline Sudan" to provide assistance to millions of people affected by the civil war that played out in the southern part of the country.
16. More recently, the organisation has provided food aid to over 4.5 million victims of the earthquake in Haiti in 2010, in 2011 to millions of people affected by the Syrian conflict, in 2014 to people affected by the Ebola outbreak and in 2015 to the Nepal earthquake survivors.

#### **How does WFP measure hunger?**

17. The organisation estimates hunger by the prevalence of undernourishment. The UN defines undernourished or food-deprived people as those individuals whose food intake falls below the minimum level of dietary energy requirements.
18. These dietary energy requirements are set by sex and age groups in consultation between the FAO, UN and WHO. The energy requirement is the amount of energy from food required to balance energy expenditure in order to maintain body-weight, body composition and a level of necessary and desirable physical activity that is consistent with long-term good health, as per the UN.
19. According to current estimates, about 8.9 per cent of the world's population or about 690 million people are hungry and as per WFP if the current trends continue, by 2030 there will be 840 million hungry people.
20. Further, about 135 million suffer from acute hunger mainly as a result of man-made conflicts, climate change and economic downturns. WFP estimates that the COVID-19 pandemic could possibly double that figure.

#### **Does WFP work in India?**

21. Yes, WFP has been working in India since 1963 and has transitioned from food distribution to providing technical assistance as India became self-sufficient in cereal production.
22. One-fourth of the world's undernourished population is in India and about 21 percent of the population live on less than \$1.90 a day.
23. At the moment, WFP is working to improve the government's targeted public distribution system (TPDS) to ensure that food reaches those that need it the most. It is also working with the government to improve the nutritional value of the Midday Meal programme and is using its own software called the Vulnerability and Analysis Mapping to identify the most food insecure groups in the country.
24. Recently, WFP has partnered with the government of Uttar Pradesh to set up over 200 supplementary nutrition production units to support distribution under the government's Integrated Child Development Services (ICDS) scheme that provides nutrition services to children below the age of six.
25. The Norwegian Nobel Committee on Friday announced the 2020 Nobel Peace Prize to the **UN agency World Food Programme (WFP)**, "for its efforts to combat hunger, for its contribution to bettering conditions for peace in conflict-affected areas and for acting as a driving force in efforts to prevent the use of hunger as a weapon of war and conflict".
26. The WFP is the 28th organisation awarded the Nobel Peace Prize since its inception in 1901.

#### **What is the WFP?**

27. It was established in 1961. Then US President Dwight Eisenhower had suggested the idea of providing food aid through the UN system. Months after it was set up, the WFP faced a humanitarian crisis when more than 12,000 people died in an earthquake in Boein Zahra in northern Iran. The WFP sent tonnes of wheat, sugar and tea. Thereafter, it played an important role in providing food aid in Thailand and Algeria.

28. Details on WFP websites show that it launched its first development programme in 1963 for Nubians in Sudan. In the same year, the WFP's first school meals project – in Togo – was approved. Two years later, WFP became a full-fledged UN programme.
29. The WFP is headquartered in Rome, Italy. It is governed by an Executive Board, which consists of 36 member states. It is headed by an Executive Director, who is appointed jointly by the UN Secretary-General and the Director-General of the Food and Agriculture Organization of the United Nations. The Executive Director is appointed for fixed five-year terms.

#### **What is the scale of its work?**

30. Today, the WFP is the world's largest humanitarian agency combating hunger.
31. In 2019, it assisted 97 million people – the largest number since 2012 – in 88 countries, says the WFP. The same year, it delivered about 4.4 million tonnes of food, purchased \$1.7 billion worth of food from 91 countries, and \$762 million worth of goods and services from 156 countries. On any given day, WFP has 5,600 trucks, 30 ships and nearly 100 planes on the move, delivering food and other assistance to those in most need, it says.
32. "Every year, we distribute more than 15 billion rations at an estimated average cost per ration of US\$ 0.61. These numbers lie at the roots of WFP's unparalleled reputation as an emergency responder, one that gets the job done quickly at scale in the most difficult environments," it says.
33. WFP India said in a statement: "From the rebuilding of post-war South Korea in the late 1960s, through the emergency response after genocides in Cambodia and Rwanda, the long-running conflict in South Sudan and the more recent wars in Yemen and Syria, WFP has been a constant presence for the poor and the destitute, refugees and the dispossessed."

#### **Why does the world need a food programme?**

34. Eradicating hunger is one of the UN's Sustainable Development Goals to be achieved by 2030. The WFP is the UN's primary agency that works towards this goal. According to the WFP, there are 690 million hungry people around the world and around 60% of them live in countries affected by conflict. The number of hungry people is expected to increase further due to the Covid-19 pandemic.
35. The WFP estimates suggest that by 2030, nearly half of the global poor will be living in fragile and conflict-affected situations. It says people living in countries with long-running crises are more than twice as likely to be undernourished than people elsewhere (2.5 times as much).

#### **What is WFP's role in India?**

36. The WFP has been working in India since 1963, two years after its establishment. Apart from **focusing on reforms in the Targeted Public Distribution System**, it provides policy inputs, advocacy and technical assistance for improving access to food.
37. The WFP has proposed some unique initiatives like Automatic Grain Dispensing Machine (Annapurti) and Mobile Storage Units for the effective implementation of TPDS. Annapurti allows beneficiaries to withdraw their foodgrain quota accurately and at a time of their choice. It can dispense two commodities at a speed of 25 kg per 1.3 minutes. It has a storage capacity of 200 kg to 500 kg.
38. According to WFP India, it has completed a pilot on rice fortification used in the government's Mid-day Meals scheme in Varanasi. Since December 2018, 4,145 tonnes of fortified rice has been produced and fed to 300,000 schoolchildren, it says.
39. Even during the pandemic, WFP India has worked with the central and state governments. For instance, it signed an MoU with the Uttar Pradesh State Rural Livelihood Mission. Under the agreement, WFP will provide technical assistance for setting up supplementary nutrition production units in 18 districts for supply of quality food to about 33 lakh beneficiaries of the Anganwadi scheme (Integrated Child Development Services). It has also prepared a guidance note for the re-opening of schools during the pandemic.

#### **What has the Nobel Committee said while declaring the award?**

40. The Norwegian Nobel Committee highlighted the work done by the WFP to eradicate hunger and underlined its role in the wake of the Covid-19 outbreak.
41. "The coronavirus pandemic has contributed to a strong upsurge in the number of victims of hunger in the world. In countries such as Yemen, the Democratic Republic of Congo, Nigeria, South Sudan and Burkina Faso, the combination of violent conflict and the pandemic has led to a dramatic rise in the number of people living on the brink of starvation," the Committee said.
42. "In the face of the pandemic, the World Food Programme has demonstrated an impressive ability to intensify its efforts. As the organisation itself has stated, 'Until the day we have a medical vaccine, food is the best vaccine against chaos'," it said.

**FACT 1. CHINA**

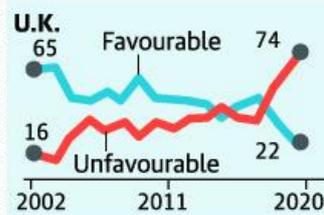
# Friendly foe

People's opinion on China has deteriorated rapidly in the recent years, shows a survey conducted by the Pew Research Center. In stark contrast, among almost all the countries surveyed, most citizens had a favourable view of China back in the early 2000s. On the other hand, the demand for Chinese products in these countries surged parallelly. Due to this surge in demand, these nations significantly increased their imports from China over the years, show World Bank trade data (WITS). By **The Hindu Data Team**

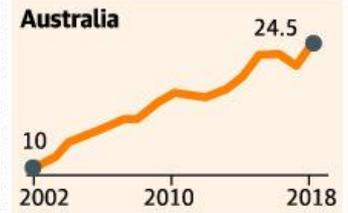
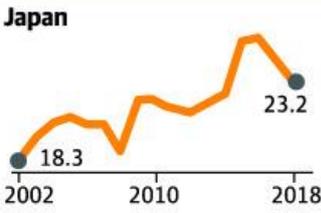
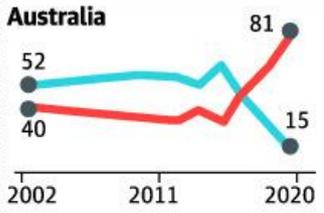
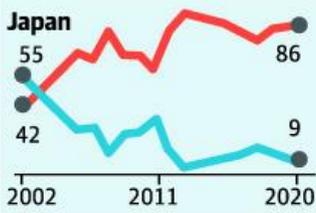
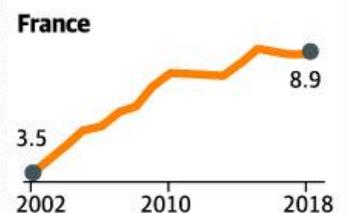
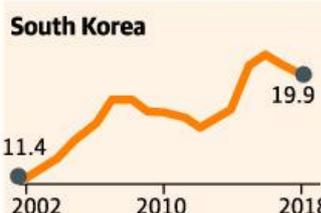
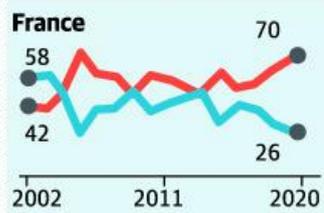
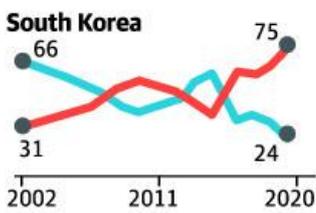
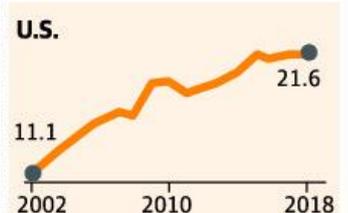
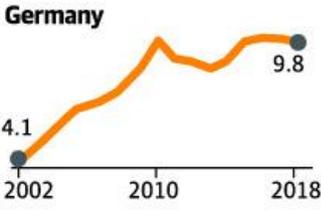
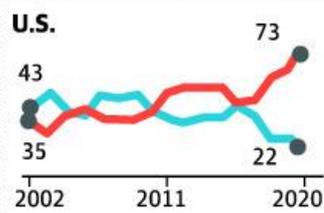
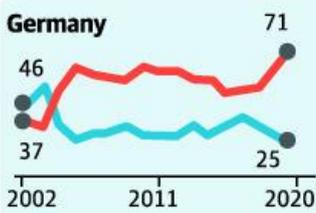
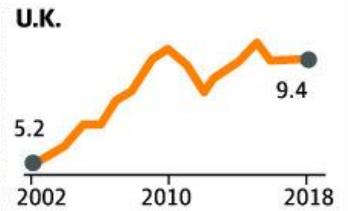
**CHANGE OF HEART** | An increasingly higher share of people across countries have developed an unfavourable opinion on China in the recent years. For instance, in the U.K., only 16% had an unfavourable opinion on China in 2002, whereas in 2020, the share increased to 74%

**MORE DEPENDENT** | However, the nations mentioned in the first chart have become more dependent on China for their import needs. China's share of U.K.'s overall imports grew from 5.2% in 2002 to 9.4% in 2018

The chart shows the share of people surveyed who viewed China in a negative light (red line) and positive light (blue line) across years in select countries



The chart shows China's share in a country's total imports between 2002 and 2018. Lately, Japan and South Korea have tried to drive down their dependency on China

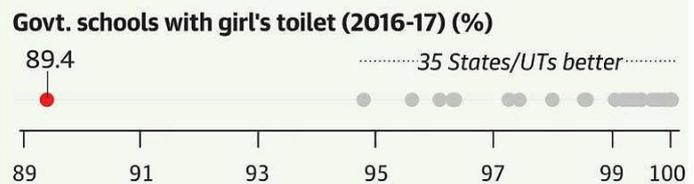
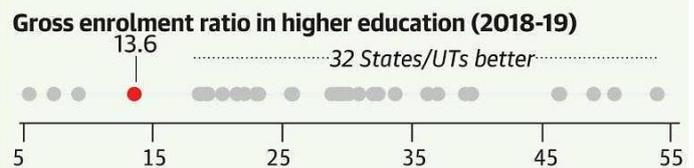
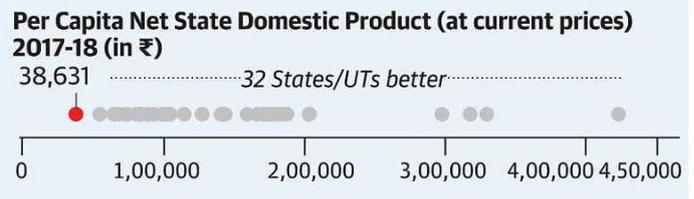
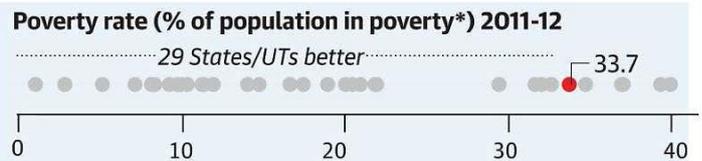
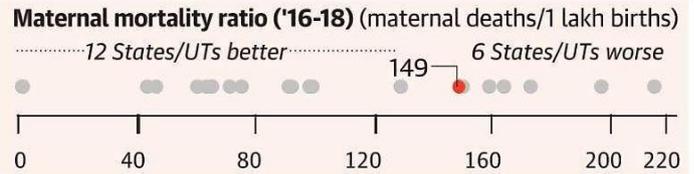
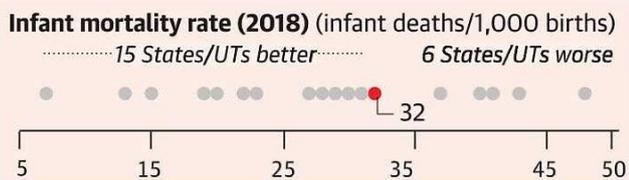
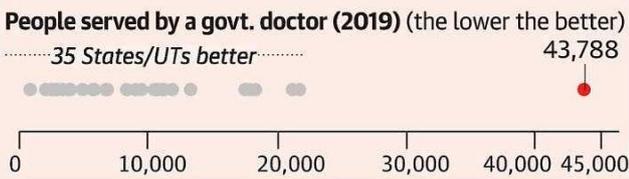
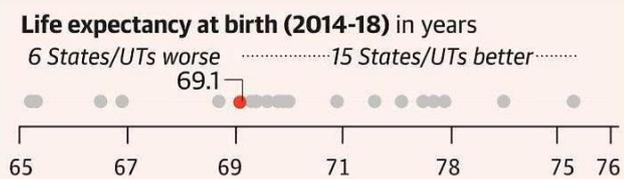
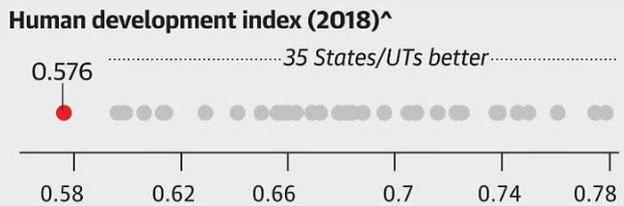


## FACT 2. HUMAN DEVELOPMENT INDEX

# Lagging behind

Among all the States, Bihar, which goes to polls on October 28, ranks lowest on the Human Development Index. The Index measures a State's performance along three dimensions: living a long and healthy life, being knowledgeable and educated, and having a decent standard of living. Whether it is in the share of schools with girls' toilets or population served by a government doctor, Bihar holds the worst record by a wide margin. By **The Hindu Data Team**

**HOW TO READ THE GRAPHS** | Each circle corresponds to a State. Bihar is highlighted in red. The number of States performing better and worse than Bihar are mentioned. The total number of States/UTs considered for an indicator may vary based on data availability



Source: RBI, SRS, National Health Mission, Dept. of Higher Education, NITI Aayog, <sup>^</sup>Global Data Lab, \*Tendulkar methodology

## FACT 3. WOMEN

# Unequal & unpaid

More than 90% of Indian women participated in unpaid domestic work at home in 2019 compared to 27% of men. On the other hand, only 22% of women participated in employment and related activities compared to 71% of men. Though subtle regional variations existed, more than 84% of women participated in unpaid domestic work across all States, regardless of men's participation in such work and women's participation in employment and related activities. The data are based on a National Statistical Office survey conducted between January and December 2019. By **Vignesh Radhakrishnan, Sumant Sen and Naresh Singaravelu**

**DIVISION OF WORK** | The table lists % of men/women aged 15-59 who participated in various activities in a day in 2019

Area	Gender	Employment and related activities	Unpaid domestic work
Rural	Male	69.7%	29.2%
	Female	22.5%	93.2%
Urban	Male	73%	22.5%
	Female	19.9%	88.8%
Total	Male	70.7%	27%
	Female	21.7%	91.8%

Source: Time Use Survey, 2019 (NSO)

**STATE-WISE ANALYSIS** | The graphs plot the % of men and women aged 15-59 who participated in unpaid domestic work and employment across States

● **SOUTHERN, WESTERN AND CENTRAL STATES**

In these States, more women went to work compared to other States. However, when it came to household work, there was no significant difference. More than 90% of women participated in domestic work in these States. Thus their work burden was relatively higher. Goa was an outlier with relatively more men participating in household work

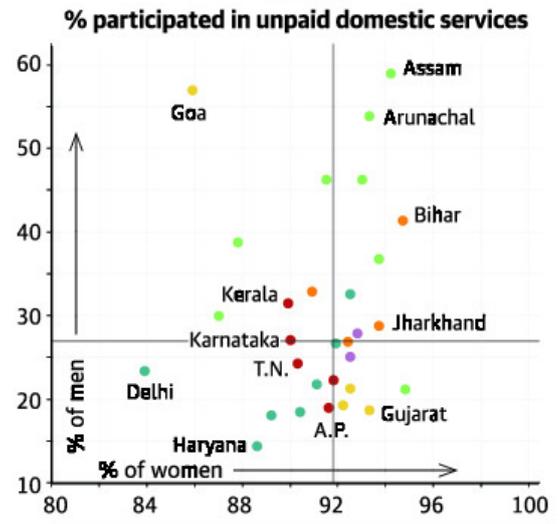
● **NORTHERN AND EASTERN STATES**

In these States too, the majority of women participated in household work. However, relatively fewer women were also engaged in employment and related activities. There was a stark difference in men's participation in unpaid household work: in many northern States, relatively fewer men participated in household work, while in the east, more men participated

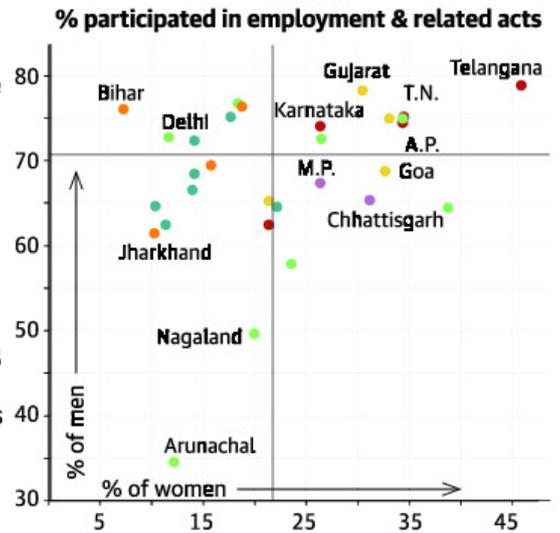
● **NORTHEASTERN STATES**

A relatively higher % of men in most of these States participated in household chores. The % of women doing such work was also very high

**Chart 1**



**Chart 2**



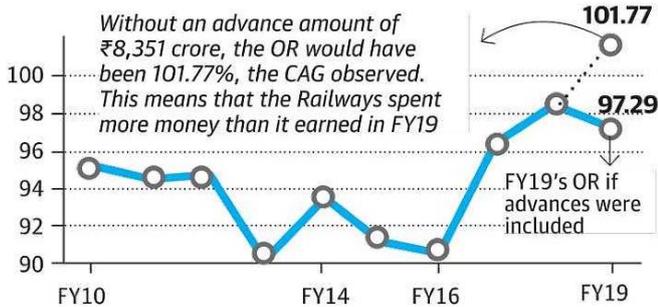
## FACT 4. INDIAN RAILWAYS

# Veering off track

The Indian Railways spent more money than it earned in FY19, according to the CAG's latest audit report. In the last five years, the Railways has consistently fallen short of the projected earnings. As a result, its dependence on extra-budgetary resources such as funds from the LIC has increased significantly. The financial situation of the Railways may worsen due to the effects of the COVID-19-related lockdown. By **The Hindu Data Team**

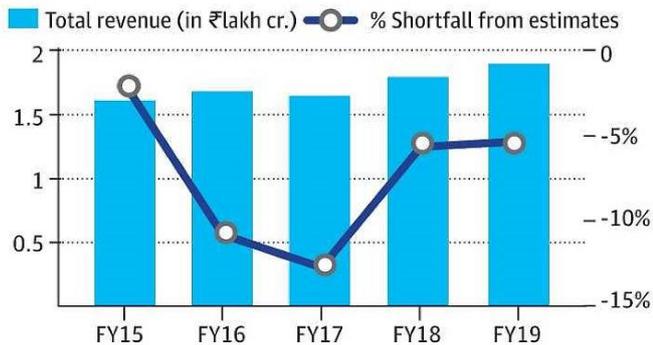
### 1. DRESSED-UP FIGURES

In FY19, the Railways spent ₹97.29 to earn ₹100, that is, its operating ratio (OR) was 97.29%. The CAG observed that the Railways had "window dressed" this figure by including advances paid to it for freight handling for FY20



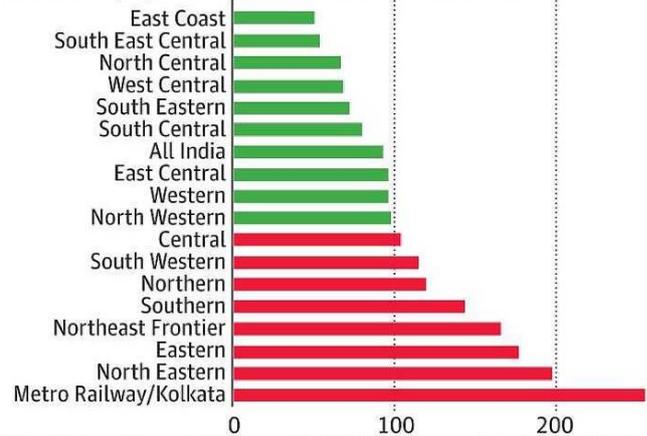
### 3. FALLING SHORT

The internal revenue generated by the Railways through ticket sales, freight earnings, etc. consistently fell short of the Budget estimates in the last five fiscals. During that period, the earnings grew at a sedate pace of 3.4%\*



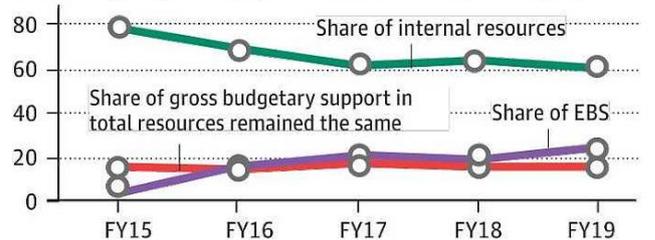
### 2. ZONAL SPLIT

Not all Railway Zones operated at a loss. Of the 17 zones, nine had an average OR of <100% in the FY15-FY19 period. Four zones had an OR of >150% in this period, which means they spent more than ₹150 to earn ₹100



### 4. SEEKING ASSISTANCE

Having consistently failed to meet the expected internal revenue, the Railways's reliance on extra-budgetary resources (EBS) such as funds from LIC and market borrowings significantly increased in the last five years



SOURCE : CAG. \* CAGR = COMPOUND ANNUAL GROWTH RATE