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# MAINSTORMING 2021

## GS PAPER - III BOOSTER



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# MAINSTORMING 2021

## PAPER III BOOSTER

### (OCTOBER - NOVEMBER 2021)

## 1. ECONOMY

### 1.1 Pointers that India is witnessing a K-shaped Recovery

#### Why in news?

The pointers are indicating that India is witnessing a K shaped recovery more than V-shaped with various groups and industries recovering much more rapidly than their counterparts.

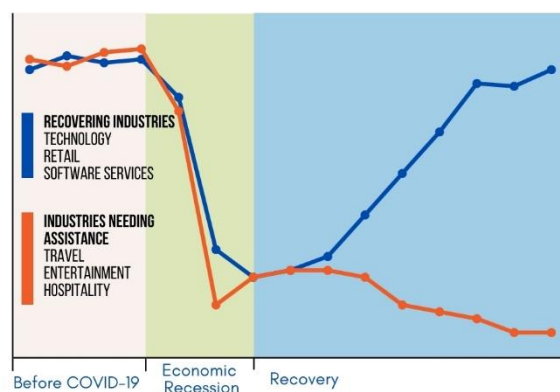
#### What shapes of economic theory are in debate?

- **V-shaped recovery** - A V-shaped recovery is characterized by a quick and sustained recovery in measures of economic performance after a sharp economic decline.
- Such recoveries are generally spurred by rapid readjustment of consumer demand and business investment spending.
- Because of the speed of economic adjustment and recovery in macroeconomic performance, a V-shaped recovery is a best-case scenario given the recession.
- The recoveries that followed the recessions of 1920-21 and 1953 in the U.S. are examples of V-shaped recoveries.
- The Economic Survey 2021 predicted a 'V-shaped' post-pandemic recovery.
- The recovery in FY22 is indeed V-shaped after the first quarter because of 20 % expansion – a sharp upturn after a quick decline.
- **K-shaped recovery** - A K-shaped recovery is one in which the performance of different parts of the economy diverges like the arms of the letter "K"
- In a K-shaped recovery some parts of the economy may see strong growth while others continue to decline.
- Overall, the natural consequence of a pandemic is the widening of inequality and a K-shaped recovery.
- Education, for example, is inherently K-shaped in many places and this has become even more skewed due to Covid-19.
- A K-shaped recovery exhibits wealth inequality, greater corporate monopolies, a continuing racial wealth gap, long-term unemployment for low-income workers, and accelerating technological adoption.

#### V-SHAPED RECOVERY



#### K-SHAPED RECOVERY



#### What indicates that the economy is witnessing K shaped recovery?

- **Signs from industry** - The effects of this K-shaped recovery can be observed through the growth and consumption in specific industries.
- A report by CRISIL indicates that in the year 2021, two-wheeler sales are set to decline by 3%-6% year-over-year on top of a lower base in the year 2020.
- The sales of two-wheelers are the second-lowest it has been in seven years and the festival season was unable to rectify this phenomenon.

- On the other hand, premium cars and premium motorcycles have been resistant to the pandemic slowdown.
- Impact of taxation** - The taxation policy of the Government insists on maintaining indirect taxes on fuel and consumer products while lowering corporate taxes.
- While inflation soars, the incomes of the middle and lower-middle-class have at best remained constant leading to a sustained loss in disposable income.
- On jobs** - Over five million people lost their jobs in October, according to a Centre for Monitoring Indian Economy (CMIE) report.
- Unemployment coupled with the high food and fuel prices push families into poverty.
- On NREGA** - There is a greater demand now for MGNREGA jobs than in the pre-COVID-19 era.
- But, in 2021-2022, the Government had cut its budget allocation towards MGNREGA by 34% for its inability to compensate workers in time and fairly.
- People who are looking for MGNREGA work cannot afford to be unpaid for such long durations and this again ties back to placing upward pressure on unemployment figures.
- Stimulus and growth** - The recovery in the stock market and other such financial assets over the past year has been phenomenal but only less than 5% of India directly benefited from the said recovery.
- The lower middle class which does not invest in such assets has no guard against inflation and their only hedge against inflation is their income.
- The disproportional benefit of the asset price inflation favouring the upper-middle-class further displays the inherent K-shape of the recovery.

#### How can the Government address this phenomenon?

- The U.S. and European economies have stimulated the economy bottom-up through unemployment cheques and social welfare schemes.
- It is crucial that the Government addresses this phenomenon and works towards aiding the middle and lower-middle class.
- It is essential to prioritise those who are more likely to spend (the middle and lower-middle-class) rather than those who have a greater propensity to save.
- Social welfare schemes must be given greater importance to assist households to get through this period.
- The velocity of money which sustained a significant shock from pandemic lockdowns needs to be kickstarted.
- The Government needs to increase the progressive (direct) taxes and reduce the regressive (indirect) taxes to ease the financial pressure on lower-income households.

### 1.2 The Duality in India's Economic Recovery

#### What is the issue?

In the process of recovery of pandemic-induced economic crisis, there's a gap between rich and poor States due to vaccination levels and between the unemployed and the well-heeled.

#### What is the status of economic recovery in India?

- The RBI projected real GDP growth of 9.5 % for the FY 2021-22.
- Similar projections have been made by multilateral agencies like IMF and World Bank, projecting GDP growth rate in the range of 8.5-9.5 % indicating a V-shape recovery.
- The optimism is the result of increased consumer confidence and vaccination coverage.
- Google data indicates that the mobility trend across retail, transit, residential, and workplaces is back to its pre-pandemic level.
- Real-time Indicators such as PMI, e-way bills, GST collection, electricity demand, etc. recovered to their pre-pandemic level.
- Industrial output recovered during the quarter ending September 2021 and recorded a growth of 8 % compared with 2020.
- The GST collections grew more than 25% in July, August, September and, October and reached an all-time high of Rs 1.3 lakh crore in October 2021.



- Exports grew 38% in the quarter ending September 2021.
- The stock market is soaring up with a record number of IPOs debuting.

### What are the reasons for India's economic recovery?

- Positive consumer confidence
- Higher vaccination coverage
- Decline in the number of infections
- Fading threat of the new Covid wave
- Increased consumption expenditure
- Festivals boosting the demand

### What factors are attributed to the uneven economic recovery?

- Level of vaccination** - The higher income States have vaccinated 45-50% of its eligible population but the fully vaccinated population in poorer States remains under 30%.
- Saving glut** - A global saving glut (cash hoarding, dead cash, dead money) is a situation in which desired saving exceeds desired investment.
- The pandemic created a saving glut with the top income quintiles leading to reduced consumption and economic uncertainties.
- It is this section of the population that is leading the present recovery.
- Unemployment** - The bottom 50 % income quintile suffered permanent loss of jobs and incomes.
- As per CMIE's consumer pyramid survey, the labour force participation rate has declined from 43% to 39% between March 2020 to September 2021.
- In absolute terms, 1.4 million people have been forced out of the labour force.
- Increased poverty** - Around 3.5 million people are unemployed and have stopped looking for jobs coming under the category of discouraged workforce.
- As a result, the absolute number of poor in the country has increased by 76 million between 2011 and 2020.
- Income disparity** - The saving glut forces the interest rate to fall and people search for alternative asset classes for a higher return.
- In India, these excess savings are getting channelised into the stock markets and real estate, fuelling asset prices.
- Asset price bubbles make the rich feel even wealthier widening the inequality.

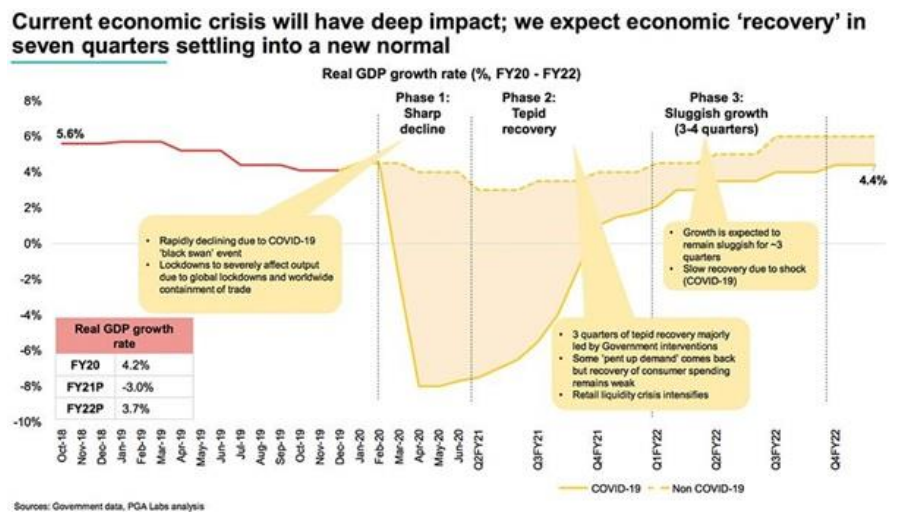
### How can the issue be addressed?

- For an even recovery, the economic duality needs to be rectified and the people in the bottom 50% income quintile who are still in doldrums, require income and consumption support.
- The focus must be on addressing the equity concern and speeding up vaccination rates in low-income States.
- Fiscal policy needs to be prioritised over monetary policy.
- Targeted demand push in the form of extension of the free ration scheme, financial support to struggling SMEs and increased outlay for MGNREGA may help sustain the economic recovery.

## 1.3 IMF Outlook: India's Case

### Why in news?

The recent edition of World Economic Outlook (half yearly report) has been published by International Monetary Fund (IMF).



### What has the report projected?

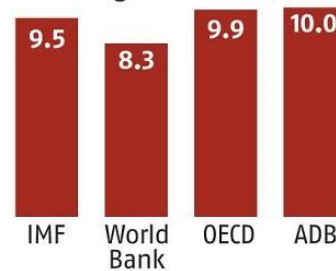
- For India, the Fund has lowered the real GDP growth rate for 2021-22 to 9.5% from the earlier 12.5%.
- Its forecast for 2022-23 was 6.9% earlier and has been upgraded to 8.5%.
- For India, the medium-range forecasts is up to 2026-27.
- The report has cited that the global economic recovery momentum had weakened due to the pandemic-induced supply disruptions.
- The dangerous divergence in economic prospects which is due to large disparities in vaccine access, and differences in policy support remains a major concern.
- The IMF has become relatively more pessimistic on the Indian rupee versus US dollar (USD) in October.
- It has also noted that the employment growth likely to lag the output recovery

### What explains the IMF's turn for pessimism on the Indian rupee?

- The IMF sees the rupee depreciating from Rs.70.9 to Rs.89.4 in 2020-21 against the US dollar by 2026-27.
- In April, the implied exchange rate forecast for 2026-27 was Rs.85.8.
- So, the US dollar is stronger by 4.2% at the end of 2026-27 as per the October 2021 forecast.
- This will lower India's nominal GDP in USD terms in 2026-27 to \$140 billion.

#### GROWTH STORY

Revised projection for India's FY22 GDP growth rate (%)



Source: Respective global bodies

IMF's latest projection for other major countries (%)



### Why recovery in employment may lag the recovery in GDP?

- Employment around the world remains below its pre-pandemic levels due to
  - Reflecting a mix of negative output gaps
  - Worker fears of on-the-job infection in contact-intensive occupations,
  - Childcare constraints
  - Labor demand changes as automation picks up in some sectors
  - Frictions in job searches and matching
- The employment lag output growth in India might be due to the already existing massive unemployment crisis and informal or unorganised sectors
- The gap between recovery in output and employment is likely to be larger in emerging markets and developing economies than in advanced economies.
- Also young and low-skilled workers are likely to be worse off than prime-age and high-skilled workers, respectively.

### What does the IMF call for?

- The top priority is to vaccinate at least 40% of the population of every country by the year-end and 70% by the middle of next year.
- The IMF called for stronger commitments at the United Nations COP26 in Glasgow and said advanced economies needed to deliver on their \$100-billion-per-year international climate finance pledge to developing countries.
- It has asked the Group of Twenty (G20) to speed up the restructuring of unsustainable debt of poorer countries.
- The IMF has earlier cited that there's still room for the Government of India to provide more support without disturbing the fiscal deficit.
- There need to be a credible medium-term strategy for India to reduce the debt-to-GDP ratio to make room for future development and infrastructure needs.

## 1.4 The Emphasis on Capital Expenditure

### What is the issue?

Recently, Finance Minister Nirmala Sitharaman held a meeting with Chief Ministers and Finance Ministers of all the States and Union Territories to push the States to focus on capital expenditure.

### What is capital expenditure?

- Capital expenditure (Capex) is the money spent by the government on the development of machinery, equipment, building, health facilities, education, etc.
- Capital expenditure includes money spent on the following:
  - Acquiring fixed and intangible assets
  - Upgrading an existing asset
  - Repairing an existing asset
  - Repayment of loan

### What is the significance of capital expenditure?

- **Multiplier effect** - Capex has the maximum multiplier effect (change in rupee value of output with respect to a change in rupee value of expenditure).
- This multiplier effect works through expansion of ancillary industries and services and job creation.

*According to National Institute of Public Finance and Policy, every rupee spent as a revenue expenditure has a multiplier effect of Rs 0.98 while capex delivers a multiplier effect of Rs 2.25 in the year it is incurred and Rs 4.80 during the course of the entire expenditure.*

- **Labour productivity** - On the supply side, Capex can facilitate labour productivity.
- **Macroeconomic stabiliser** - Capital expenditure is an effective tool for countercyclical fiscal policy and acts as a macroeconomic stabiliser.
- **Revenue generation** - Capital expenditure leads to the creation of assets are long-term in nature and allow the economy to generate revenue for many years and boosts operational efficiency.
- **Liability reduction** - Along with the creation of assets, repayment of loan is also capital expenditure as it reduces liability.
- **Economic growth** - Government capex catalyses private investment, increases production capacity thereby speeding up economic growth which in turn creates a lot more jobs.

### What is the status of Government spending on capital expenditure?

- The budgetary allocation towards capital expenditure is Rs 5,54,236 crore in FY2021-22 which is a rise of 34.5% over FY2020-21.
- The States cumulatively spend more on capex than the Centre. In FY21, the states spent Rs 4.46 lakh crore while the Centre's spend was Rs 4.12 lakh crore.
- States spending on capex has better multiplier effect than the expenditure incurred by the Centre because the Centre's capex includes defence capital spending (roughly about Rs1 lakh crore) which provide little impetus to the Indian economy.
- But, the money spent by states is not uniform throughout the year but is bunched up and spent in the last quarter of the fiscal.
- Sometimes, the states are unsure of the revenue flow and prioritise revenue expenditure and asset creation happens towards the end of the fiscal.

### What measures have been taken to boost the states' Capex spending?

- The Finance Ministry recently fixed quarterly targets and incentivised those that achieved it to borrow more.
- The States were supposed to spend 15% of the budgeted capex by Q1, 45% by Q2, 70% by Q3 and 100% by Q4.
- In Q1 of FY22, combined capex of 23 States rose by 15% than in FY20 and the Centre's capex rose by 55% in Q1 FY22 than in FY20.
- Some States opposed that such a policy impinges on fiscal federalism and argued that States had the right to spend the money they get from devolution the way they want.



- Most of the high GDP States like Maharashtra, Tamil Nadu, Gujarat and Rajasthan failed to meet the target.
- The Finance Minister decided to release a month's devolution in advance (Rs 95,082 crore was released on November 22) to leave enough cash in the hands of the States so that they could ramp up the capex.

### Will the States change their approach?

- This is debatable considering the uncertainty that the pandemic has created when it comes to revenue generation.
- **Uncertainty in economic recovery** - Even though GST collections have risen sharply, it is not clear if it is due to increased demand or a sustained recovery and it is too early to say if the Coronavirus has been vanquished.
- States may want to wait and watch before ramping up capex with many European countries imposing total lockdown again.
- The Centre is better placed to spend more on capex as it gets revenue from various types of cess that are not shareable with the States.
- **Additional debt** - For many States the additional borrowing is not an incentive as they are already heavily leveraged and would not want to add to the debt.
- Tamil Nadu, Andhra Pradesh, Sikkim and Manipur, have negative cash balance as of end-October and it is unclear if they will use it on capex or prefer to clear their pending revenue expenses.
- **Need for Capex** - Spending on roads, power plants, ports and airports generate better multiplier effect than investing in buildings.
- Both the Centre and the States should also focus on the quality of capex.
- It is necessary if India has to escape its current moderate pace of economic expansion and post strong double digit GDP growth in a sustained manner in the future.

## 1.5 Global Minimum Corporate Tax Deal

### What is the issue?

Around 136 countries have signed an agreement at the OECD meeting to redistribute taxing rights and impose a global minimum corporate tax on large MNCs operating globe over.

### What is the need for a global minimum corporate tax rate?

- Large MNCs have traditionally been taxed based on where they declare their profits rather than where they actually do business.
- This allowed several large companies to shift their profits to low-tax jurisdictions (tax havens).
- This has led to significant decline in Global corporate tax rates since the 1980s to well below 25% in 2020.
- The double taxation avoidance agreements have been exploited by using the mismatches between the tax laws of various countries.
- The COVID-19 pandemic has also severely battered economies and affected the tax revenues of governments.

### What does the new agreement say?

- The agreement fixes the corporate tax rate at 15% on large MNCs across the world.
- It let the governments to impose a top-up tax on home companies that pay lower than 15% tax on profits they declare abroad thus adding additional annual revenues to the budgets of governments.
- The deal also allows a government to impose top-up taxes on the subsidiary of a foreign company if it



declares profits through its home headquarters in a different country and pays less than 15% taxes on those profits.

- This prevents companies from profit shifting to tax havens.
- India, China, Russia, Germany and other countries have signed the agreement, which has to be implemented from 2023.

#### **What measures have been taken earlier to prevent tax evasion?**

- **Digital Services Tax- Countries like Belgium, Britain, India and Indonesia brought in Digital Services Taxes on the local sales of foreign firms with online platforms.**
- **Equalisation levy** – Based on the recommendations of Akhilesh Ranjan Committee in 2016, India became the first country to implement the equalisation levy
- It was levied at 6% on online advertisement services earned by non-residents and at 2% on e-commerce operators.

#### **What are the expected benefits?**

- **The agreement will stop the countries racing against each other to cut taxes to attract businesses.**
- It will increase the tax revenues and help governments invest in social development.

#### **What are the challenges in the agreement?**

- **Oxfam International has criticised the deal, arguing that the minimum corporate tax rate of 15% is too low.**
- Some view that it may hamper the various economic benefits that come with tax competition among countries.
- The so-called tax havens such as Ireland, Switzerland, Bermuda etc. are defended as they benefit citizens of high-tax countries.
- Higher taxes in the home countries will suppress the ability of the companies to serve the consumers in their countries.
- India would have to reconsider the equalisation levy and address issues such as the share of profit allocation and the scope of subject-to-tax rules.
- Simultaneous implementation of the law by all the signatories will be a tedious process.
- India's Direct Tax Code has to be revamped in accordance with the concept of global minimum tax.
- The agreement if achieved may herald the dawn of the 'Golden Era' of direct taxes.

### **1.6 Where and How Inflation Hits**

#### **Why in news?**

Over the last few months, as most economies have started to recover, inflation has emerged as an important challenge.

#### **What is the issue?**

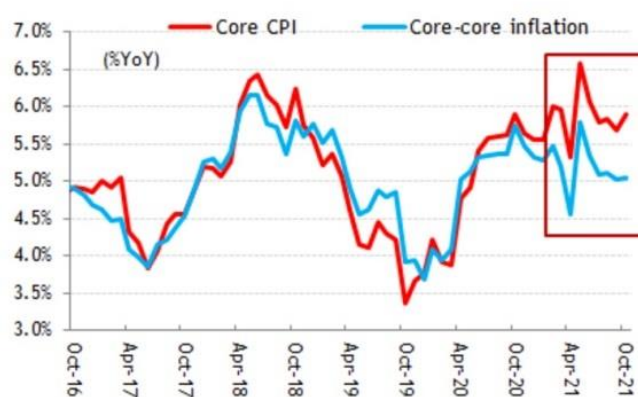
- Data from October showed the highest year-on-year spike in inflation in over 30 years in the United States.
- There are other countries too - inflation in Germany is 4.5%, Russia over 7%, Brazil 10%, Turkey 20%, and Argentina over 50%.
- The sharp and steady increase in prices has been mainly due to the unexpectedly fast demand recovery along with supply bottlenecks.
- The term “**stagflation**” which was popular in the 1960s and the 70s has regained currency.
- Inflation is the rate of increase in prices over a given period of time. Stagflation describes a situation of stagnant economic growth, along with persistently high inflation.

#### **What is the situation in India?**

- India does not face a serious stagflation situation, but it has its own set of inflation worries.

- Over the past few months, headline retail inflation measured by the Consumer Price Index (CPI) has been well within the RBI's comfort zone of **6% at the upper end**.
- But Indians are likely to face sustained inflationary pressures till the next financial year (2022-23).
- In India, high inflation occurred even before the start of the pandemic, mostly in food and fuel prices which is usually a temporary phenomenon due to short-term or seasonal factors.
- But if these prices stay up for long, they tend to seep through the **core inflation which is now higher than headline inflation**.
- A major reason for high headline inflation in India was the high inflation in food prices but food price inflation has simmered down over the past few months.
- Core inflation is close to 6% now, and unless international crude prices come off sharply, core goods inflation may stay elevated.

**Chart 2: Core inflation stays elevated, at close to 6%**



*The headline inflation measure demonstrates overall inflation in the economy. It is more volatile compared to core inflation.*

*Core inflation is the change in the costs of goods and services but does not include those from the food and energy sectors.*

### Who has been worst affected by high inflation of late?

- Crisil Research published a detailed paper explaining how the same level of inflation affects different sections of India differently.
- During the last of 2020-21 and in the first half of 2021-22, it was the urban poor (bottom 20% in the income category) that faced the highest inflation rate.
- But since April, food prices inflation have come down sharply, fuel inflation has soared, while core inflation has stayed high.
- In the urban areas, fuel price inflation has been soaring at almost 15% and the worst affected are the urban poor who spend almost 11% of their income on buying fuel.
- In rural areas, people belonging to the bottom 20% income bracket have some relief as food and beverages which account for over 60% of their total consumption, has an inflation rate of just 3.5%.
- The rich who spend much of their total consumption on goods and services that are neither food nor fuel will face a tougher time since core inflation is likely to stay high for some time.

**Table 1: CPI inflation across different income classes\* (y-o-y %)**

Income segment	FY21		H1FY22	
	Rural	Urban	Rural	Urban
Top 20%	5.9	6.4	5.4	5.4
Middle 60%	5.9	6.8	5.2	5.5
Bottom 20%	5.9	7.0	5.2	5.6

\*with share of commodity groups in basket as weights  
Source: NSSO, National Statistics Office (NSO), CEIC, CRISIL

## 1.7 US Inflation and Impact on India

### What is the issue?

The United States' Labor Department reported that retail inflation had spiked to 6.2 % in October whereas India's National Statistical Office data showed that retail inflation rose to 4.5 % for the same month.

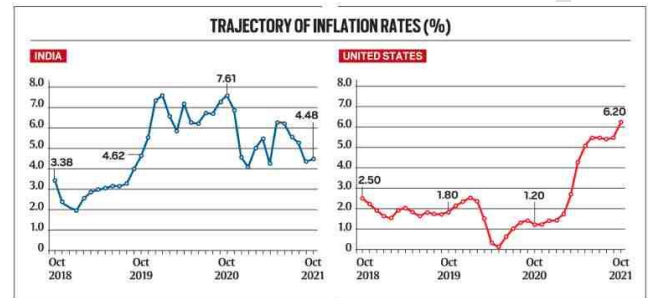
### What is inflation rate?

- It is the rate at which prices increase over a given period.
- In India, the inflation rate is calculated on a year-on-year basis.

- A high inflation rate erodes the purchasing power of people.
- Since the poor have less money to withstand fast-rising prices, high inflation hurts them the hardest.

### What has caused the inflation surge in the US?

- **Increase in demand** – the unexpectedly fast recovery spurred an all-round demand from consumers.
- This recovery was further fuelled by billions of dollars pumped by the government to provide relief to consumers and those who lost their jobs and to stimulate demand.
- **Decrease in supply** - The pandemic in 2020 led to widespread lockdowns and disruptions across the world.
- Companies let go of employees and sharply curtailed the production.
- The supply chains of production spanning several countries and continents were bent out of shape.
- Since the pace of economic recovery has been much faster than the supply chain recovery, this has worsened the mismatch between demand and supply thus triggering a sustained price rise.



### Why is US inflation a matter of concern?

- The Federal Reserve, the US central bank, targets an inflation rate of 2 %.
- The 6.2 % inflation rate in the the US is the largest year-on-year increase in the last three decades.
- The retail inflation in the US has been rising sharply almost every passing month since May 2020.
- Hence, the US inflation rate has become a massive concern for its citizens.

### What is happening in India?

- India was one of those rare major economies where high inflation occurred even before the pandemic.
- The retail inflation had frequently been above the comfort zone of the RBI between 2 % and 6 % for an extended period since late 2019.
- Despite India entering a technical economic recession in 2020, RBI has not lowered its benchmark interest rates since May 2020 because India's retail inflation has stayed above or near the RBI's upper limit for the last two years.
- It is only in the last couple of months that the headline retail inflation rate has reduced to below 5 %.
- While the overall inflation average appears manageable at present, the core inflation is now over 6 % which threatens to breach the RBI's comfort zone.

### What will be the impact of US inflation on India?

- When prices increase globally, it will lead to higher imported inflation i.e. Indians import will become costlier.
- High inflation in the advanced economies, especially the US, will likely force their central banks to adopt a tight money policy which will lead to higher interest rates.
- So, Indian firms trying to raise money outside India will find it costlier.
- Also, RBI will have to align its monetary policy at home by raising interest rates domestically.

## 1.8 RBI Retail Direct Scheme and the Integrated Ombudsman Scheme

### Why in news?

Prime Minister Narendra Modi has recently launched two customer-centric initiatives of the RBI — the RBI Retail Direct Scheme and the Integrated Ombudsman Scheme.

### What is RBI Retail Direct Scheme?

- The scheme allows retail investors to buy and sell government securities (G-Sec) online, both in the primary and secondary markets.
- The retail investors can now invest in G-Secs by opening a gilt securities account called **Retail Direct Gilt (RDG) Account** with the RBI.



- Only one bid per security is permitted and payment to the aggregator/receiving office can be made through using the net-banking or UPI facility from the linked bank account.
- Registered investors can access the secondary market transaction link on the online portal to buy or sell government securities through NDS-OM.
- For buying of government bonds, payment can be made by transfer of funds to the designated account of CCIL (Clearing Corporation of India NDS-OM).

A **"Gilt Account"** means an account opened and maintained for holding Government securities. Instead of money, the account is debited or credited with treasury bills or government securities.

**Retail Investors** are non-professional investors who buy and sell securities or funds that contain a basket of securities such as mutual funds and exchange traded funds (ETFs).

### What is RBI Integrated Ombudsman Scheme?

Ombudsman is an appellate body where customers can escalate complaints if the financial institution fails to address the complaint within 30 days. The banking ombudsman scheme was launched in 1995.

- The integrated ombudsman scheme amalgamates 3 ombudsman scheme of RBI - banking ombudsman scheme of 2006, ombudsman scheme for NBFCs of 2018 and ombudsman scheme of digital transactions of 2019.
- It is based on **"One Nation-One Ombudsman"** with one portal, one email, and one address for the customers to lodge their complaints.
- The new scheme also includes non-scheduled primary co-operative banks with a deposit size of Rs 50 crore and above.
- The responsibility of representing the Regulated Entity and furnishing information in respect of complaints filed by customers would be that of the Principal Nodal Officer in the rank of a General Manager in a Public Sector Bank or equivalent.
- It will improve the grievance redress mechanism for resolving customer complaints against RBI's regulated entities.
- **RBI's Executive Director-in charge of Consumer Education and Protection Department** would be the Appellate Authority under the integrated scheme.
- Customers will be able to file complaints, submit documents, track status, and give feedback through a single email address.
- There will be a multilingual toll-free number that will provide all relevant information on grievance redress.
- It will be cost-free for customers of banks and members of the public.

### What are the importance of these schemes?

- The schemes were launched at a time when rising inflation adds pressure on the RBI to lift rates.
- Tighter monetary policy is likely to weaken the demand for bonds and this slew of measures aim to ease the financial sector.
- These people centric initiatives will be a major structural reform that will deepen the financial inclusion.
- RBI data shows that with increased awareness, digital penetration and financial inclusion, there was a steep rise in the number of complaints against various regulated entities.
- The retail participation will see higher participation of retail investors which would imply better and wider understanding of the market.

## 1.9 Digital Lending Draft Rules

### Why in news?

The 'Report of the Working Group on Digital Lending including Lending through Online Platforms and Mobile Apps' has been released by the RBI.

### What is digital lending?

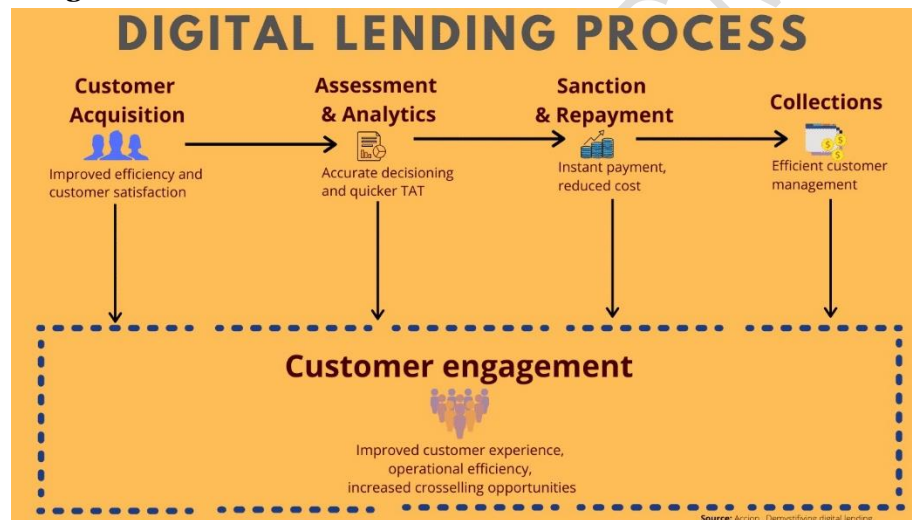
- Digital lending is the process of availing credit online
- Digital lending is mostly preferred by those who are generally not able to avail any credit through the formal sources of finance like banks.

### What digital lending models have been in place?

- Presently, there are three digital-lending models seen through the regulatory-approach lens.
- **Bank/NBFC-owned digital platforms** – They operate under the direct regulatory purview of RBI.
- **Fintech companies' proprietary digital platforms** - They work in partnership with banks/NBFCs, typically under an outsourcing arrangement to support sourcing of borrowers, assess creditworthiness using alternative data and recover the dues.
- Being mere intermediaries, these platforms are not required to seek any registration with RBI and are only indirectly regulated through RBI's outsourcing guidelines applicable to Banks/NBFCs.
- **Peer-to-peer (P2P) lending platforms** - They usually involve the otherwise unregulated retail lenders.
- RBI has mandated such platforms to seek registration as NBFC-P2P and thus they are directly regulated by RBI.

### What is the significance of digital lending?

- Instant disbursal of funds
- Customer friendly application
- Paperless process
- Transparent and simplified process
- Reasonable interest rates
- Ensure swift payback
- Reduced credit gap
- Operating cost efficiency
- Financial inclusion – Example- JAM (Jan Dhan-Aadhaar-Mobile) trinity



### What are the concerns of digital lending?

- Unauthorised lenders
- Exorbitant rates of interest
- Use of coercive repayment methods
- Non consensual collection of user data

*RBI report finds 600 illegal loan apps operating in India which are available on several app stores for Android users.*

### What are the key recommendations on digital lending?

- The working group was set up on January 13, 2021 with Jayant Kumar Dash, Executive Director of RBI as the Chairman.
- **Loan servicing** - The balance-sheet lending through the apps should be restricted to RBI-regulated entities.
- All loan servicing should be executed directly in a bank account of the balance-sheet lender and disbursements should always be made into the bank account of the borrower.
- **Nodal agencies** - Nodal agencies must be set up to run digital lending applications through stringent verification processes .
- **Legislative measures** - The group has recommended that in the medium term, the government may consider bringing in legislation to prevent illegal lending activities by introducing the 'Banning of Unregulated Lending Activities Act'.
- **Technology standards** - Certain baseline technology standards should be developed when it comes to digital lending apps and compliance with those standards as a pre-condition.
- Algorithmic features used in digital lending has to be documented to ensure transparency.
- The group recommends that auditable logs should be kept for every action that a user performs on the app and that every fintech app must be signed/ verified in a secured manner.

- **Data collection and usage** - Data should be collected from the borrower with prior information on the purpose, usage and implication of such data and with the explicit consent.
- All such data must be stored in servers located in India.
- **Reporting of lending activities** - Lending by regulated entities (REs) through lending apps must be reported to credit bureaus.
- And only regulated entities can access bureau data for the purpose of collecting or reporting data on behalf of borrowers.
- **Interest calculation** - Interest must be calculated on the basis of the actual number of days and no prepayment penal rate of interest for short-term consumer credit.
- **Shaping the Self-Regulatory Organisations (SRO)**- Standardised code of conduct for recovery to be framed by the proposed SRO in consultation with RBI.
- The group recommended the maintenance of a 'negative list' of Lending Service Providers by the proposed SRO.

#### What does the draft rule imply?

- The panel wants to encourage more legitimate lenders while enhancing customer protection and making the digital lending ecosystem safe and innovative.
- The digital lending market in India is evolving fast, and with the Fourth Industrial Revolution it is a matter of time for a shift from digital-too to digital-first to digital-only.
- It is now up to digital apps to play by the rules and self-regulate themselves.
- As the universe of fintech grows, RBI must arm itself with the necessary technology and technical expertise needed to track lending apps on a real-time basis.

### 1.10 Equalisation Levy: Prevailing Issues

#### What is the issue?

Due to the amendments made in the Finance Act 2021 to widen the equalisation levy provisions, various interpretational issues have arisen.

#### What is Equalisation Levy?

- **Equalization Levy 1.0** –Commonly known as **Google Tax**, EL 1.0 was introduced in 2016 as a withholding tax.
- It covered only services and is introduced via part of Finance Act and not by way of amendment to the Income Tax Act 1961.
- It charged an equalisation levy at the **rate of 6%** of the amount of consideration for any specified service received or receivable by a -resident from a person resident in India or a non-resident having a permanent establishment in India.
- **Equalization Levy 2.0** - Commonly known as the **Amazon Tax**, EL 2.0 was introduced in 2020 which is directly levied on the Non-resident.
- EL 2.0 covered e-commerce supply or services and was made by way of amendment to Finance Act 2016.
- It charged an equalisation levy at the **rate of 2%** of the amount of consideration received or receivable by an e-commerce operator (non-resident) from e-commerce services to a person resident in India or a non-resident or a person who buys goods and services using internet protocol address located in India.
- EL 2.0 is applicable to e-commerce operators (ECO) having sales, turnover, or gross receipts of Rs20 million in a financial year.

#### What amendments were made in the Finance Act 2021?

- Any foreign company providing services/goods in India through a digital platform could be within the scope of the levy.
- Given the expanded definition of 'online sale of goods', a mere payment that is made through an online mode can potentially be subject to the transaction to equalisation levy.
- The compliance obligation to discharge the levy in India is on the non-resident company.

- Pure traditional brick and mortar businesses that use a fair degree of digitisation, (website, digital payments) may also come under the net of EL 2.0.

#### What issues need to be addressed under EL 2.0?

- **Interplay between EL and Royalty/Fees for Technical Services (FTS)** - The classification of income as royalty/FTS/business income has been a subject matter of prolonged litigation.
- Royalty and FTS are subject to withholding tax on gross basis but if an enterprise has a Permanent Establishment in other country then such income is taxable as business profits on net basis.
- The present provisions are silent on the treatment of EL already paid by the taxpayer.
- There is a lack of clarity on whether the EL paid by the enterprise shall be allowed as credit against the tax liability arising on account of taxability as Royalty/FTS or refunded to the taxpayer and if it is to be refunded what is the mechanism to claim such refund.
- **Non-availability of foreign tax credit (FTC)** - The question whether the ECO will be eligible to claim the FTC of EL paid will depend on the local tax laws in home jurisdiction.
- The taxes covered under the respective Double Taxation Avoidance Agreements (DTAA) between India and foreign countries generally do not cover the EL and it is likely that the tax credit may not be available for the EL paid in India.
- With countries with which India does not have a DTAA, if the home country jurisdiction of ECO recognises EL as a type of direct tax and entitles the ECO, the ECO may be able to claim the tax credit.
- **Applicability to inter company transactions and reseller arrangements** - The EL 2.0 provisions do not provide any exemption for inter-company/ intra-group transactions.
- The present scope of EL 2.0 is widely worded and could cover such inter-company transactions provided they qualify within the definition of 'ECO' and 'e-commerce supply or services' as provided in EL laws.
- **Technological challenges in locating IP address** - Transactions between two non-residents where either the marketplace is in India or the IP address is located in India have been brought under the ambit of the EL 2.0.
- This could cover transactions of a non-resident tourist purchasing goods or services on a non-resident operated e-commerce platform using an Indian IP address which may pose a challenge for various stakeholders.
- **Meaning of the term 'digital or electronic facility or platform'** - Neither the EL law nor the Income Tax Act defines or explains this term.
- In the absence of any definition, the term is capable of being interpreted in different ways and can potentially cover ubiquitous digital communication tools like emails or calls.
- **Definition of the term 'goods' and 'services'** - The term 'goods' and 'services' have neither been defined under the Finance Act nor the Income Tax Act leading to interpretational issues.

#### How does the future of EL 2.0 look?

- The future of EL 2.0 depends on the adoption of OECD Pillar 1 and 2 amendments by India.
- Foreign companies need to factor in these levies as part of their global tax planning as it is likely to increase the cost of doing business in India without the ability to claim the tax credit in the home country.
- It is now necessary to assess the implications of EL 2.0 and currently it requires clarity.

#### 1.11 Sunset Clause for Bad Banks

##### What is the issue?

The RBI recently gave license to National Asset Reconstruction Company Limited (NARCL), popularly known as a bad bank but the absence of a clause about the lifespan of NARCL may lead to a moral hazard problem.

##### What are bad banks?

- Technically, a bad bank is an asset reconstruction company (ARC) or an asset management company that takes over the bad loans of commercial banks, manages them and finally recovers the money over a period of time.
- The bad bank is not involved in lending and taking deposits.
- It just helps commercial banks clean up their balance sheets and resolve bad loans.



- The takeover of bad loans is normally below the book value of the loan and the bad bank tries to recover as much as possible subsequently.
- US-based Mellon Bank created the first bad bank in 1988.
- The role of the bad bank is to establish a liquid market for NPAs to enable the banks to sell their NPAs at a fair value.

### What is the status of NPAs in India?

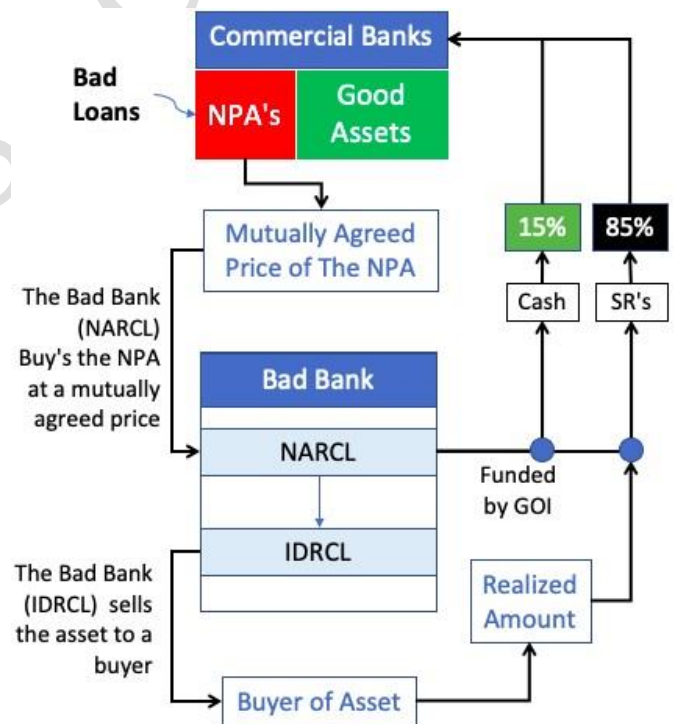
- Currently, the Indian banking system has one of the highest gross non-performing assets (GNPA) to total asset ratio globally.
- Post-covid stress scenarios estimated by the RBI pegs it at an aggregate GNPA ratio in the range of **12.5- 14.7 %**

### What mechanisms have been initiated to recover NPAs?

- Debt recovery tribunals - under the Recovery of Debts Due to Banks and Financial Institutions (RDDBFI) Act in 1993
- Asset Reconstruction Companies (ARCs) - a part of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI Act) in 2002
- Insolvency and Bankruptcy Code (IBC) in 2016

### What is NARCL?

- **India's first-ever bad bank**, National Asset Reconstruction Company Limited (NARCL) will acquire stressed assets worth about Rs 2 lakh crore from various commercial banks
- It will pay 15% of the agreed price in cash and the remaining 85% will be in the form of Security Receipts.
- The rest will be paid when the assets are sold by **India Debt Resolution Company Ltd (IDRCL)**.
- Rs 90,000 crore of the asset will be managed in the first phase.
- A government guarantee will back the Security Receipts for a maximum amount of Rs.30,600 crore, and the guarantee will be valid for a resolution period of five years.
- The NARCL is essentially an Asset Reconstruction Company (ARC) with only two distinguishing features
  1. NARCL is intended for dealing in big sized tickets
  2. NARCL has a partial government guarantee.
- The effectiveness of ARCs hinges on
  1. A focused mandate for setting up the ARCs
  2. Limited lifespan of the ARC
  3. Market-based resolution of NPAs



### What are the issues in NARCL?

- The absence of a clause about the lifespan of NARCL may lead to a moral hazard problem.
- Propagation and evergreening of bad loans - Public sector banks (PSBs) which own 51 % stake in NARCL may continue buying their own stressed assets through NARCL.
- There are question marks over the government guarantee of Rs 30,600 crore in providing liquidity and creating a market for the NPAs.

### How can the problems be addressed?

- The government should address the lifespan issue of NARCL in the form of a sunset clause to increase the effectiveness of the NARCL.

- There should be a fair and transparent mechanism while setting the haircut on the stressed assets by the NARCL.
- The net asset value of the Security Receipts must be fairly priced to boost the participation and liquidity in the security receipts market.
- There needs to be a strong political will to recognise bad loans and support legal infrastructure to address wilful defaulters.

### 1.12 Unity Small Finance Bank

#### Why in news?

The RBI has issued a Small Finance Bank (SFB) license to the consortium of Centrum Financial Services and Digital payments platform BharatPe.

#### What are SFBs?

- Small Finance Banks is a specific segment of banking created by RBI with to undertake basic banking activities to un-served and underserved sections.
- The draft guidelines for licensing of small banks in the private sector were formulated and released by RBI in 2014.
- **Objectives** - The objectives of setting up of small finance banks will be to further financial inclusion by
  - Provision of savings vehicles
  - Supply of credit to small business units, small and marginal farmers, micro and small industries and other unorganised sector entities, through high technology-low cost operations.
- Eligible promoters include
  - Resident individuals/professionals with 10 years of experience in banking and finance
  - Companies and societies owned and controlled by residents
  - Existing NBFCs, Micro Finance Institutions and Local Area Banks that are owned and controlled by residents can opt for conversion into small finance banks
- There will not be any restriction in the area of operations of small finance banks.
- The minimum paid-up equity capital for small finance banks shall be Rs. 100 crore.

#### What is the significance of this SFB?

- The RBI has issued a new bank license after a gap of nearly 6 years and the new SFB has been incorporated as 'Unity Small Finance Bank'.
- The assets and liabilities of Punjab and Maharashtra Co-operative Bank will be taken over by the new entity.
- This proposal sheds light on the need for traditional lenders to expand their digital infrastructure.
- In the buy-now-pay-later (BNPL) and micro-lending models, companies like Paytm, Google Pay, Amazon Pay, etc. have partnered with NBFCs to assess creditworthiness of an existing customer and present it to the lender as a potential borrower.
- For BharatPe, an SFB licence means it could expand its lending portfolio.
- The lending rates offered by SFBs could be attractive for small merchants across the country looking to borrow to fulfil their working capital needs.

### 1.13 RBI's Microfinance Proposals

#### What is the issue?

RBI's **Consultative Document on Regulation of Microfinance** which aims to promote financial inclusion of the poor and competition among lenders is likely to unfavour the poor.

#### Why is microfinance crucial for rural households?

- Microfinance is becoming increasingly important in the loan portfolio of poorer rural households.
- Unsecured or collateral-free loans from private financial agencies (SFBs, NBFCs, NBFC-MFIs and some private banks) forms the major chunk.

- These loans were of disproportionate significance to the poorest households and to persons from Scheduled Castes and Most Backward Classes.
- These microfinance loans were rarely for productive activity and used mainly for house improvement and meeting basic consumption needs.
- Poor borrowers took microfinance loans, at reported rates of interest of 22% to 26% a year against the low interest offered by institutional mechanisms such as PACS.

#### Why are microfinance loans costlier?

- **Method of repayment** - An official flat rate of interest used to calculate equal monthly instalments which rises the effective rate of interest over time.
- **Processing fee and insurance premium** – A processing fee of 1% is added and the insurance premium is deducted from the principal.
- As the principal is insured in case of death or default of the borrower or spouse, the interest rate is higher in response to high risk of default.

#### What is different about the recent phase of growth of financial services?

- The privately-owned for-profit financial agencies are regulated entities and are promoted by RBI.
- Lending by small finance banks (SFBs) to NBFC-MFIs has been recently included in priority sector advances
- In the 1990s, given the lack of regulation and scope for high returns, several for-profit financial agencies such as NBFCs and MFIs emerged involving in malpractices.
- The microfinance crisis of Andhra Pradesh led RBI to formulate a regulatory framework for NBFC-MFIs in 2011 based on the recommendations of the Malegam Committee.
- Later RBI permitted SFBs to take banking activities to the “unserved and underserved” sections of the population.
- The RBI’s consultative document notes, 31% of microfinance is provided by NBFC-MFIs, and another 19% by SFBs and 9% by NBFCs.

#### What will be the implications for the poor?

- The current share of public sector banks in microfinance (SHG-bank linked microcredit) of 41%, is likely to fall sharply.
- This privatisation of rural credit will reduce the share of direct and cheap credit from banks and leave the poor borrowers at the mercy of private financial agencies.
- It has also raised concerns about the implications for women borrowers.
- To meet the credit needs of poorer households strengthening of public sector commercial banks and firm regulation of private entities is needed.

### 1.14 Need for a Vibrant Corporate Bond Market

#### What is the issue?

As India’s corporate bond market is expected to boom and with the vacuum created by erstwhile development finance institutions (DFIs), the time is ripe for developing a deep, liquid and vibrant corporate bond market.

#### What is the status of Indian corporate bond market?

- Since 2008, corporate bond market has been witnessing higher investment flows.
- It was mainly due to
  - Simplification of procedures
  - Sophisticated clearing and settlement of trades
  - Focus on better disclosure standards
  - Issue of exotic bonds (Masala bonds, Green Bonds, etc.)
  - Raising the quantitative limits for foreign institutional investors
- While primary corporate bond issuances were of ₹7.8 lakh crore during FY2020-21, outstanding corporate debt stood at ₹35.1 lakh crore (18.2 % of India’s GDP).

- The Indian bond market has been dominated by sovereign bonds and the corporate bond market has a meagre share of 27% during the last decade.

#### What are the problems in Indian corporate bond market?

- Crowding out by issuance of G-Secs
- Private placement
- Persistent inflation coupled with higher interest rates
- Information asymmetry
- Limited diversified basket of instruments
- Illiquid secondary market
- Non-availability of repo options
- Absence of broad investor base
- Lack of credit default swaps/insurance

#### What measures can be suggested to overcome this issue?

- **Financial literacy and education** - Since over 76 % of adults in India do not even understand the basic financial concepts, audio-visual contents/booklets may be developed as part of the digital literacy drive.
- **Incentives for retail investors** - Indian corporate bond market is dominated by a few institutional investors and professional fund managers, mainly concentrated in financial services sector (72.1 %).
- The government may provide tax incentives to channelise household savings into financial assets such as corporate bonds from real estate and gold.
- **ESG framework** - Corporates following the ESG (Environmental, Social, Governance) framework may have greater strategic freedom and will be the primary choice of market-savvy investors.
- **Credit guarantee enhancement:** At present, credit guarantee fund scheme exists for MSMEs to extend collateral-free credit.
- Similar one can be provided for enhancement of corporate bonds through creation of an earmarked fund by collecting cess from the cash-rich companies.
- **Maintaining price stability** - The government's public debt needs to be gradually downsized for effective transmission of monetary policy in order to crowd in private investment.
- **Enhancing liquidity** - Tri-party repo market may be developed for corporate bonds to provide liquidity for the participants in the market.
- The regulators may act together to allow 'A' rated corporate bonds as collateral to expand the issuers and the investor base.
- **Functional autonomy** - Independent directors and credit rating agencies should have functional independence to improve corporate governance and to boost the investors' confidence.
- **Corporate bond index** - A dedicated corporate bond index enables real time monitoring of the market and fosters price discovery, thereby increasing investor's buoyancy.

#### 1.15 Fed's Dot Plot

##### Why in news?

The Federal Reserve announced that it will reduce its asset purchases by \$15 billion a month in November and December 2021 which made commentators to look forward to the actual US Fed dot plot on interest rates.

##### What is the concern associated with Fed Reserve's reduction of asset purchase?

- [Tapering](#) means gradual slowing down of purchases of securities and bonds.
- Once the tapering is complete, the Fed may go for reduction in the size of the balance sheet to slowly remove the monetary stimulus.
- In 2013, a similar announcement led to a 'tantrum' across financial markets.



## What is US Fed dot plot?

- The dot plot is the expected trajectory of interest rate hikes proposed by US Fed members in graphical form.
- The US **Federal Reserve's Federal Open Market Committee (FOMC)** releases its dot plot along with its projections on other major economic indicators like GDP, inflation, etc.
- 18 members participate and every member of the committee offers their prediction on where the policy rate should be over the next three years.
- Each member's interest rate forecast is then plotted on a graph in the form of a dot plot.
- The dot plot was introduced by the Fed in **2012** and is published **four times a year** (once a quarter) in March, June, September and December.

## Why is it important?

- The Fed's dot plot tells the market in advance where interest rates could be heading in future.
- The dot plot is particularly important because the US central bank has been maintaining its interest rates near zero for a prolonged period.
- The dot plot will give a hint to the markets on when the rate hike cycle may begin and, more importantly, what could be the possible pace of increases in rates.

## What does the dot plot say?

- The dot plot released in June 2021 had shown 12 members out of 18 predicting that rates would remain at the current levels of 0-0.25 per cent.
- But in September, this had come down to nine indicating that the first-rate hike is possible in 2022 itself.
- It also showed that there could be three rate hikes in 2023.

## 1.16 RBI caps IPO Funding by NBFCs

### Why in news?

The RBI has issued a fresh set of rules for non-banking finance companies (NBFCs) which limits lending to IPO investors to Rs 1 crore per borrower from April 1, 2022.

### What is an Initial Public Offering (IPO)?

- An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance.
- Companies must meet requirements by exchanges and the Securities and Exchange Commission (SEC) to hold an IPO.
- IPOs provide companies with an opportunity to obtain capital by offering shares through the primary market.

### How does IPO funding work?

- IPO Funding is a loan offered for applying in primary stock market by NBFC's to high net worth individuals (HNI).
- The investor pays only small margin for applying in IPO and rest amount is funded by the lender.
- Interest is charged between 8 to 12% and it varies by the lender.
- Through IPO Funding, an investor can leverage its own funds in primary market and thereby maximize the profits in a very short span of time.
- IPO Funding loans are short term loans, where in most cases they are for 7 days, from the IPO closing day to date of listing of IPO shares.
- Repayment of these short term loans is up to 3 months.

### What are the advantages of IPO funding?

- Investor can apply for more shares, thus increasing the chances of a large allotment.
- Offers good opportunity to make huge profits in a short span.
- Only small amount of margin is needed which increases the profits multifold.

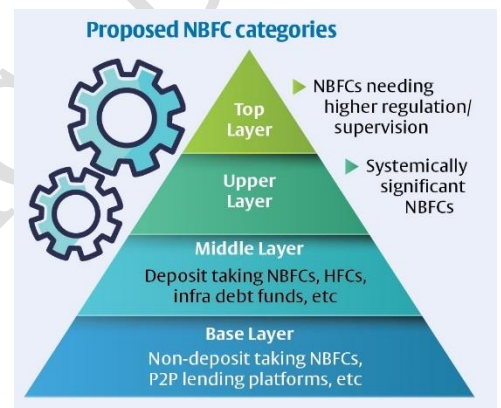
- Funding cost came down significantly in recent time because of quick IPO listings and reduced interest rates.
- Simple Documentation and streamlined speedy processing of loans.

### What are the concerns of IPO funding?

- It is a high risk high reward investment that could result in to massive losses.
- Since investor pays only small amount of margin money, the losses could be multi fold.
- It is not for investors applying in retail category.
- Borrowing limit varies as per the scheme launched for the IPO, and on the level of subscription under the HNI category.
- Interest rate varies as per the scheme launched for the IPO, and is charged upfront.

### What is the new RBI framework?

- **Layer-based structure** - Under the new framework, the regulatory structure for NBFCs shall comprise four layers — base, middle, upper and top layer.
- The first category primarily entails non-deposit taking NBFCs with less than Rs 1,000 crore in assets.
- The second category include all deposit taking NBFCs irrespective of asset size.
- The Upper Layer will comprise the top ten eligible NBFCs in terms of their asset sizes.
- Depending on sudden risk factors, the RBI can move Upper Layer companies to the Top or fourth category, citing systemic risks.
- **Sensitive exposure** – Exposure to the capital market and commercial real estate shall be the sensitive exposure for NBFCs.
- The RBI has proposed sensitive sector exposure norms for NBFCs in the middle and upper layers.
- **Minimum net owned fund** - The regulatory minimum net owned fund for NBFC-Investment and Credit Companies, NBFC-MFI and NBFC-Factors shall be increased to Rs 10 crore by March 2027.
- **Management of NBFC affairs** - At least one of the directors should have relevant experience of having worked in a bank or an NBFC.



### Why has the RBI come out with this rule?

- Non-banks are able to borrow funds at 4-5 % and interest rates on such loans have dropped to 7-8 %.
- Leveraged IPO bids unfairly tilt the allotment process in favour of short-term bettors removing the genuine long-term investors and distorting price discovery.
- The new rule aims to moderate the over-subscription numbers and listing gains.
- The RBI aims to put the NBFCs on line with banks that already has Rs.10 lakh limit.

### What implication will the RBI rule have for upcoming IPOs?

- The new rules might reduce the quantum of funds available with high networth investors (HNI) for bidding in IPOs.
- The number of oversubscriptions in the HNI category will come down which will benefit the price discovery process.
- The NBFC sector has undergone considerable evolution in terms of size, complexity, and inter-connectedness and hence there is a need to align the regulatory framework for NBFCs.

## 1.17 SEBI - ESG Funds

### Why in news?

SEBI recently came out with a consultation paper for introducing disclosure norms for ESG (environment sustainability and governance) mutual fund schemes.

## What are ESG funds?

- ESG Mutual Funds are Thematic Mutual Funds that invest in socially responsible companies.
- ESG funds are those funds whose asset allocation mostly includes shares and bonds of companies that are evaluated based on the environmental, social, and governance factors.
- An organisation is said to be ESG compliant if it meets all the criteria of environmental, social, and governance standards.
- The ESG companies are assessed on their sustainability before they are given the tag.
- The ESG parameters reflect on an organisation's culture, the risk involved, and management, among other things.

## Criteria included, among others

### Environment: Companies that -

- put out carbon or sustainability reports
- Limit harmful pollutants and chemicals
- Seek to lower greenhouse gas emissions
- Use renewable energy sources

### Social: Companies that -

- operate an ethical supply chain
- support LGBTQ rights and encourages diversity
- have policies to protect against sexual misconduct
- pay fair wages

### Governance: Companies that -

- embrace diversity on their board
- embrace corporate transparency
- employ a CEO independent of the board chair

## What are the SEBI's recent proposals?

- Earlier in 2017, SEBI had said that sectoral or thematic funds must have at least 80% of investments in specific sectors or themes.
- Now, SEBI has specified that ESG funds should have at least 80% of their total assets in securities following the sustainable theme, since these funds fall under the thematic category.
- The rest 20% assets should not be in stark contrast with the ESG philosophy.
- The AMCs (Asset Management Companies) should disclose the nature and extent of the scheme's ESG-related objectives and the approach used for screening companies.
- This will help investors judge if the fund meets their requirements.
- ESG funds should only invest in companies which have filed Business Responsibility and Sustainability Report (BRSR) from October 1, 2022.

## What is the rationale?

- With the increased emphasis on adopting sustainable growth, there has been a surge in ESG investing globally.
- ESG assets surpassed \$35 trillion by the end of 2020.
- The momentum is expected to continue with ESG funds accounting for a third of global assets under management in 5 years.
- Investing based on the ESG theme is beginning to attract higher interest in India too.
- As per SEBI data, at the end of September 2021, there were 8 ESG thematic equity schemes with assets under management (AUM) of ₹12,085 crore.
- However, the regulation of this segment is at a nascent stage, globally and nationally.

- SEBI's recent norms is an effort to tighten the disclosure, strategies and practices of funds based on the ESG theme.
- It will help check ambiguity and usher in transparency.

### 1.18 The Mauritius route of Tax Evasion

#### What is the issue?

The Financial Action Task Force (FATF) has removed Mauritius from its 'grey list' of countries which may indirectly lead to higher investment to India from the Island nation.

#### What is the status of Mauritius in FATF's list?

- Mauritius was put on the list in February 2020 for its weak system to counter money laundering and terror financing.
- Mauritius has been one of the largest contributors of FDI to India but due to this restriction RBI had last year directed that financial firms should not be set up with funds from Mauritius.
- Mauritius has strengthened its anti-money laundering and terror financing process and has addressed related technical deficiencies to meet the commitments in its FATF action plan.
- FATF, therefore, informed that Mauritius is no longer subject to its increased monitoring process.

#### Why was Mauritius preferred for routing foreign investments into India?

- **India-Mauritius double tax avoidance agreement (DTAA)**– DTAA is a tax treaty signed between India and another country so that taxpayers can avoid paying double taxes on their income earned from the source country as well as the residence country.
- This allowed foreign investors to avoid capital gains tax on investments.
- **Weak regulatory system in Mauritius** - Loose regulations have made it easy for companies to round-trip money into India through name-plate entities.
- But with the adoption of the General Anti Avoidance Rules in 2017 and changing of the DTAA which removed the tax benefits, the Mauritius route has become less attractive.
- Towards the beginning of 2012, FPIs from Mauritius were the largest holders of Indian equity and debt instruments but Mauritius has slipped to second position in the last five years.
- Foreign direct investors are also increasingly preferring the Singapore route where the regulations are tighter.
- After the US, Mauritius is the second largest route for inflow from foreign portfolio investors.

#### What will be the implications of removing Mauritius from the grey list?

- Removal of Mauritius from grey listing will help regain its status as a financial centre.
- This would enable Indian non-banking and other financial services companies to receive FDI from funds and vehicles incorporated by international investors in Mauritius.
- It is also expected that now there would be less scrutiny by custodian banks on the 'beneficial ownership' (BO) of Mauritius vehicles coming in as FPI and FDI.
- Many offshore funds continue to prefer Mauritius which is comparatively inexpensive and serves as a gateway for investments in African countries.

### 1.19 Refining India's Oil Purchasing Strategy

#### Why in news?

Government is looking at bringing together the domestic refiners (both public and private sector players) to strategise and negotiate with the oil producers.

#### What is the present scenario with crude oil?

- International crude oil prices have been consistently surging in October 2021, with an increase of around \$10 a barrel in average prices compared to September.
- The rising fuel prices are creating a huge burden on the consumers.



- It is also denting the country's trade balance, as over 85% of India's crude oil requirements are met through imports.

#### **What has the Standing Committee on Petroleum & Natural Gas (2013-14) recommended?**

- Instead of all oil PSUs carrying out purchase of crude oil, it is recommended to form a joint venture company promoted by all interested PSUs.
- This will be entrusted with the work of importing of crude oil required for them in line with their refining specifications.
- This company may be given enough flexibility enjoyed by private sector refineries.
- They can thus carry out their operations including price negotiation, hiring of ships and negotiate better terms on freight etc. which will help PSUs save work relating to imports.
- Till July 1998, the entire requirement of crude oil imports was canalised through Indian Oil Corporation (IOC), the sole canalising agency.
- Thereafter, private and joint sector refineries were allowed to procure their own requirement of crude oil.
- Import of crude oil was further decanalised from April 2002, with all PSU oil companies being permitted to import crude oil independently.

#### **What is the recent proposal?**

- The Ministry of Petroleum and Natural Gas has initiated efforts to bring together oil refiners.
- This time the government is attempting to bring all refiners, both public sector as well as private players, together.
- Initially the group will meet once a fortnight and exchange ideas on crude purchases.
- The refiners can form joint strategies and even do joint negotiations wherever they are comfortable.
- There will be no direct involvement of the government as it will just facilitate making of a consortium.
- The deals will be struck by the players with the producers.

#### **What is the significance?**

- Purchase of crude oil is a complex process.
- It involves negotiations of contract floating of tenders, shipping arrangements, unloading at ports, transporting to refineries etc, refinery complexity and most importantly the discounts offered by the sellers.
- Also, private sector refiners have more flexibility in their crude sourcing mechanism than a public sector entity.
- So, forming a consortium or a structured body can go a long way in planning the requirement and working out the logistics.
- It can help the entities analyse together the data of the country they want to import from.
- They can better understand the procurement requirements and then order together with stronger bargaining power.
- However, the commercial agreements or deals will be independently struck by the refiners as the purchase order will be separate.
- The concept is still at a nascent stage; the nuances of terms of reference and how it will operate has to be worked out.

### **1.20 Trade Union-Gig Economy Interplay**

#### **What is the issue?**

Trade unions are actively engaging with the emergent gig economy, bridging the gaps between platforms and workers.

#### **What are the recent developments?**

- Trade unions are adapting quickly to new-age ways of organising and collective bargaining.
- Gig worker federations have initiated social media training for members as a newer means of organising workers.

- Urban Company (a home-based service platform) announced a 12-point agenda to improve the working conditions of its worker-partners after social media highlighted lapses.
- GST Council considered making e-commerce operators (ECOs) in food delivery such as Swiggy and Zomato liable to pay the GST on restaurant services supplied through them.

### Significance

- Trade unions are predicated on traditional employment, while the gig economy relies on flexibility and heterogeneity.
- Given this inherent dichotomy, the trade union-gig economy interplay is noteworthy.

### What are the notable developments globally?

- California's AB5 law (passed with the efforts of trade unions) - Entitles independent contractors to 'employee' status.
- The recent invalidation of Proposition 22 (enacted in opposition to AB5) has resulted from trade union activity.
- New York - Platforms and trade unions are negotiating a middle-path, ensuring minimum pay and other benefits to independent contractors.
- This is in exchange for trade unions giving up demands for 'employee' status; a legislation is expected soon.
- The recently proposed Protecting the Right to Organise Act, 2021 (PRO Act) in the US expands the scope of worker rights to organise and collectively bargain.
- UK - The Supreme Court unanimously held that drivers on a popular ride-hailing platform were "workers," making them eligible for social security benefits.
- This improves the potential for collaboration between platforms and trade unions on issues including earnings, representation, organising and pensions.

### How is the trade union-gig economy interplay in India?

- Multiple gig worker organisations have emerged in India.
- Claiming significant membership, they seek to address wide-ranging concerns (including wages, compensation and working conditions) and not solely social security.
- Formation of an 'umbrella union' of gig workers across the country.
- A petition is filed at the Supreme Court, seeking social security benefits for gig and platform workers as "workmen" under existing legislation.

### What are the long-pending demands and concerns?

- Call for reduction in commissions
- Call for waiver of vehicle loans
- Gig worker organisations remain dispersed.
- Gig worker organisations not gaining stronghold in India due to -
  - i. The dearth of traditional employment opportunities in India, and the low entry barriers for gig work.
  - ii. In the absence of traditional 'jobs', gig workers may lack the incentive to organise and bargain for 'rights'.

### What has led to the recent attention on gig economy?

- Pandemic-induced dependence on gig workers
- Issues highlighted via gig worker unions
- Enactment of the Code on Social Security, 2020
- Increasing social media engagement - Becoming a potent tool to represent issues and negotiate with platforms.

## 1.21 Trade Protectionism in India

### What is the issue?

The trade protectionism measures in India is at rise and could potentially hamper the international trade limiting the trade gains.

## What reflects India's protectionist regime?

- **Tariff measures** - The average of India's tariffs has increased by almost 25 per cent to 11.1 per cent in 2020-21 since the past decade.
- These increases in tariff rates have reversed the political consensus on tariff liberalisation that India followed since 1991.
- **Anti-dumping measures** - According to the WTO, from 2015 to 2019, India initiated 233 anti-dumping investigations.
- The anti-dumping initiations by India from 1995 till 2020 stand at 1,071 which is higher than the initiations by the US, the EU and China.
- **Ban on import or export** - India recently amended Section 11(2)(f) of the Customs Act of 1962, giving the government the power to ban the import or export of any good if it is necessary to prevent injury to the economy.
- This provision was applied earlier only to gold and silver and is consistent with Article XX(c) of the GATT.
- The amendment is non-accordance with the GATT provisions that impose certain conditions for imposing import bans such as
  - If a sudden, significant and sharp increase in imports causes serious injury to the domestic industry
  - On trade on account of balance of payment difficulties
  - For national security purposes
  - Must not be applied in an arbitrary or discriminatory manner
  - Must not restrict the international trade
- Expanding the scope of Article 11(2)(f) to cover any good is inconsistent with India's WTO obligations.
- **FTA restrictions** – Rules of origin determine the national source of a product and helps in deciding whether to apply a preferential tariff rate (if the product originates from India's FTA partner country) or to apply the most favoured nation rate (if the product originates from a non-FTA country).
- India amended the rules of origin requirement under the Customs Act imposing burdens on importers to dissuade them from importing goods from India's FTA partners.
- **Vocal for local** – India's Atmanirbhar Bharat (self-reliant India) gives preference to domestically made goods creating an ecosystem where imports are undermined, upsetting the trading partners.

## What are the implications?

- Protectionist steps are justified on the ground that they would help domestic companies grow into viable competitors.
- But the fact is that protectionism does not benefit the domestic economy.
- It rather encourages inefficiency of domestic manufacturers.
- It is likely to hurt exports, make domestic goods costlier and reduce benefits to consumers from increased competition.
- So in the long term, protectionism is likely to have only a negative effect on industry's ability to compete globally.
- For India to reap the benefits of the summits and partnerships like Quad, there needs to be a fundamental shift in policy.
- A more pragmatic approach in line with the recent initiatives to reverse the retrospective tax legislation and provide support to the flailing telecom sector must be expanded.

## 1.22 WTO's 12th Ministerial Conference

### Why in news?

The World Trade Organization's 12<sup>th</sup> Ministerial Conference (MC12), a forum to ensure trade rules will take place from 30 November to 3 December 2021.

### What is the WTO Conference (MC12)?

- The WTO is an inter-governmental organization for negotiating trade agreements, settling trade disputes, monitoring trade policies and delivering technical assistance on trade to developing countries.

- The Ministerial Conference is the **highest decision making body** of the WTO.
- Trade ministers generally meet at the Ministerial Conference every two years, but MC12 was postponed due to COVID-19.
- MC12 will be chaired by Timur Suleimenov, the Kazakhstan President's Envoy for International Trade.

### What will happen at the WTO Conference in December?

#### MC12 Multilateral Discussions

- **Vaccines and other critical supplies** - Vaccine distribution, export restrictions, trade facilitation and improved transparency in medical supply chains needs to be discussed.
- Temporary intellectual property (IP) waivers have been debated.
- **Saving fish stocks** - Negotiations have been ongoing since 2001 to eliminate harmful fishing subsidies and a revised text is being discussed ahead of MC12.
- **Food and Agriculture** - Developing countries are keen to see a permanent solution preventing challenges to government food purchase programmes when these breach certain trade-distorting limits.
- Some countries are also pushing to reduce farming subsidies and some for new market access talks.
- **Electronic tariffs** - A temporary prohibition on customs duties on electronic transmissions is up for debate again.

#### MC12 Plurilateral Discussions

- **Services trade** - 65 WTO members accounting of 90% of global services trade have agreed to cut red tape in the way they regulate services.
- Its implementation could result in small businesses benefiting from an additional 2-3% cost reduction compared to large firms.
- **Sustainable trade** - Three sustainable trade coalitions will be launched on environmental sustainability, phasing out fossil fuel subsidies and on tackling plastic pollution.
- **Boosting investment** - Negotiations are looking at issues like streamlining the administrative procedures to make an investment in a country.
- **Going digital** - Talks on digital trade continue with text finalized on spam, e-signatures, e-contracts, consumer protection and open government data and paperless trading.
- **Addressing gender inequalities** - A group of WTO members will issue a joint declaration on improving gender-disaggregated data for better trade policymaking and ensuring gender-mainstreaming in the WTO's development work.

### In which issues does India have major stake?

- WTO reforms on special and differentiated treatment (S&DT) of developing countries
- Public procurement for food security
- Response to Covid-19
- A patent waiver proposal floated by India and South Africa to fight the pandemic

### What is India's stand on S&DT?

- India is concerned that developed nations are pushing on reforms that would dilute provisions on S&DT (special and differential treatment) for developing countries
- S&DT allows developing and less developed countries to enjoy certain benefits such as longer time periods for implementing agreements and binding commitments, measures to increase trading opportunities, etc.
- Currently, any WTO member can designate itself as a developing country and avail these benefits but developed countries believe that self-declaration will put the WTO on a path to failed negotiations and institutional irrelevance.
- However, India is open to discussions on classification of developing countries.
- India's best strategy at the ministerial is to make constructive suggestions on strengthening WTO as it has vital interests in a rules-based multilateral trading order while firmly standing up for the developing world.



### 1.23 Nobel Prize 2021 for Economics - Public Policy Relevance

#### What is the issue?

- David Card, Joshua Angrist and Guido Imbens were the 2021 Nobel Prize winners in Economics for their contribution in the field of labour economics.
- Here is how their work, based on cause-and-effect related issues, is particularly relevant in public policy.

#### What is the normal practice?

- Randomised experiments are carried out to find out the cause and effect of any economic phenomenon.
- Question is posed to the participants without telling them the purpose.
- But this has the problem of selection bias and tends to be narrow.
- E.g. the impact of the pandemic on schooling and children is hard to be analysed through random trials.
- To overcome this shortcoming, Card, Angrist and Imbens used the observational data approach for answering questions of causation.

#### What is the observational data approach?

- This approach is within the realm of natural experiments which cannot be influenced by the analyst.
- In other words, it involves observing people's behaviour in the environment in which it typically occurs.
- It makes observations as unobtrusively as possible so that participants are not even aware that they are being studied.
- The 2019 prize too had gone to Abhijit Banerjee, Esther Duflo and Michael Kremer for their work based on the 'experimental approach'.
- Evidently, both sets of theories have their place in economics and add value.

#### Applications

- To study the results of any action taken by, say, the government on the stakeholders concerned over a period.
- To answer simple questions on, say, a course which must be offered to students in an university.
- For companies, to fine tune their marketing plans.

#### What are the key questions in labour economics answered by their work?

##### Do more years of education lead to higher future income?

- Their experiments showed that students who studied more earned higher income.
- [Notably, this study cannot be done with a fixed set of respondents.
- Understanding the socio-economic conditions and observing the target populations over a time period is important, which the observational data approach helped.]

##### Does an increase in minimum wage lead to lower employment?

- This is a critical question for the labour market to find a balance.
- The labour wants a higher wage. But companies like to be selective in paying higher wage to the more efficient.
- David Card's analysis shows that employment does not suffer with an increase in minimum wage.
- Because, when minimum wage increases labour tends to become more efficient which helps the organisation to increase output.
- So, labour costs do not get burdensome.

##### Do immigrants create problems to the local labour force?

- This was one of the key issues in the US that came up especially under the Trump regime.
- It was alleged that immigrants tend to take over the jobs of the local population.
- David Card's analysis shows this does not necessarily happen, and it depends on the level of work.

#### What are the challenges?

- The larger question is whether corporates can wait for long to get these results before launching a product.

- Often the product is differentiated and cannot be compared with stories of other companies.
- So, such natural experiments tend to work better for government-driven programmes where experiences from the past provide signals for the future.
- In other words, from the public policy point of view, these theories are very relevant and more likely to be pursued.

### 1.24 Ease of Doing Business Rankings - A Controversy

#### What is the issue?

IMF MD Kristalina Georgieva is under scrutiny for her role in alleged rigging of the World Bank's Ease of Doing Business rankings when she was chief executive there.

#### What is the controversy around Georgieva?

- Georgieva is a Bulgarian economist who held several high-profile positions in European politics.
- In January 2017, she was appointed the chief executive of the World Bank group.
- In January 2019, she took over as the interim president of the WB group after Jim Yong Kim resigned.
- In October 2019, she took over as Managing Director of the IMF.
- In January 2018, Paul Romer, then the chief economist of the World Bank told that the World Bank's EoDB rankings were tweaked for political reasons and he resigned.
- In August 2020, the World Bank suspended its EoDB rankings after finding some **data irregularities** in the 2018 and 2020 reports.
- It was alleged that the EoDB rankings were tweaked to inflate the ranks for China (in EoDB 2018) and Saudi Arabia, UAE and Azerbaijan (EoDB 2020).
- China is the third-largest shareholder in the World Bank after the US and Japan.
- Wilmerhale's investigations found that the World Bank staff compromised the data to help China's ranking under pressure from Georgieva.
- The report states that Georgieva punished the World Bank's country director for mismanaging the Bank's relationship with China.

#### Why do EoDB rankings matter?

- The EoDB rankings indicate how easy or difficult it is for anyone to do business in a country.
- It maps whether and by how much a country improves on a number of parameters, such as the time taken to start a business, how costly it is to get a construction permit, etc.
- EoDB is used by international investors to assess risk and opportunity across the globe.
- It is used by political leaders to either claim success or criticise the existing government.

#### How reliable are the rankings?

- **Cherry-picking of top cities** - Top cities such as Beijing and Shanghai in China, Mumbai and Delhi in India are selected to make the ranking go high.
- **Suspicion on data integrity** - There is a disconnect between the rise in EDB index rank and economic outcomes.
- **Changes to the data** - There were reported changes in the data, inconsistent with the Doing Business methodology.

#### How can the ranking methodology be improved?

- A substantial methodological shift towards data collection from representative samples of actual business owners and operators is needed.
- Government functions that provide essential public goods to the private sector should not be ignored.
- Countries should not be ranked on their tax rates.
- The indicators "protecting minority shareholders" and "resolving insolvency" shall be eliminated.

- “Employing Workers” indicator shall be restored and improved countries should not be ranked based on this information.
- The transparency and oversight of Doing Business needs improvement.

### 1.25 Questions arising from QES data

#### What is the issue?

The Labour Bureau’s All-India Quarterly Establishment-based Employment Survey (QES) for the first quarter of 2021 (April to June) throws up some perplexing numbers raising suspicions on reliability.

#### What is the survey about?

- The objective of the QES is to enable the government to frame a “sound national policy on employment”.
- It covers establishments employing 10 or more workers in the organised segment in 9 sectors - manufacturing, construction, trade, transport, education, health, accommodation and restaurants, IT/BPO, and financial services.
- These sectors account for 85% of the total employment in establishments employing 10 or more workers as per Sixth Economic Census which serves as the basis of QES survey.
- The QES has reported a simple growth rate of 29% in employment in FQ2021 over 2013-14.

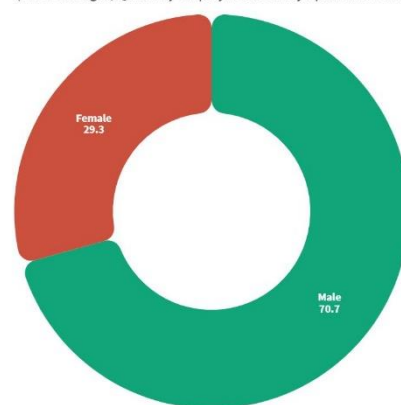
#### What are the other surveys regarding employment?

- While the QES provides a demand side picture, Periodic Labour Force Survey (PLFS) gives the supply side picture of the labour market.
- The release of the PLFS results in 2019 showed the highest-ever unemployment rate of 6.1%.
- CMIE data has been projecting a distressed labour market scenario especially during the pandemic.
- PLFS is released by **National Sample Survey Office (NSSO)** under MoSPI to generate estimates of various labour force indicators.

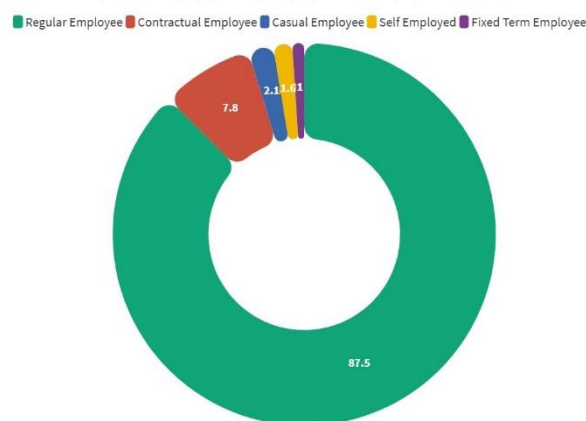
#### What cautions were raised from QES data?

- **Limited coverage - establishments with ten or more workers account for a mere 1.66% as per the Sixth Economic Census.**
- Also, a disproportionately 81.3% of workers are in unorganised sector as per the PLFS data.
- **Employment growth despite economic slowdown** - The QES provides very broad employment figures — 3.8 crores approximately in FQ-2021.
- But CMIE data revealed a discouraging picture in April where salaried class shed around 3.4. million jobs compared to March 2021 and the urban unemployment rate was as high as 9.78%.
- The real national income growth rates also declined from 2017-18 onwards.
- **Credibility of statistics** – QES reports that 87.5% of the estimated workers were regular workers and just about 2.1% were casual workers.
- Also it mentions that 66-86% of estimated employees received full wages in contrary to other reports including those by the Central government.
- **Overlaps between the registrations** – AES says that contract workers accounted for overall 7.8% .
- But Annual Survey of Industries for 2017-18 mentions that 36.37% of the total workers are employed in the organised factory sector.

**Gender-wise Estimated Employment Share in Sectors**  
(in Percentages, Quarterly Employment Survey April-June 2021)



**Sector-wise Estimated Workers according to terms of Employment**  
(in Percentages, Quarterly Employment Survey April-June 2021)



Source: QES, 1st Quarter Report

**FAQTLY**

- **Methodological shortcomings** - An outdated sample frame, non-comparability of employment numbers from EC-2013 with QES and differences in methods used for gathering information adds to unreliability.

#### What can be inferred from the survey?

- **It would have been more prudent to await the release of a newly updated frame in the EC-2020 and then canvass for the QES.**
- F12021 QES must be considered as a starting point of the new data set rather than as a continuum of the Sixth EC.
- The Labour Bureau could have put a high-frequency labour market information base like most advanced economies.

## 2. INFRASTRUCTURE

### 2.1 Need to Cure Discoms' Health

#### What is the issue?

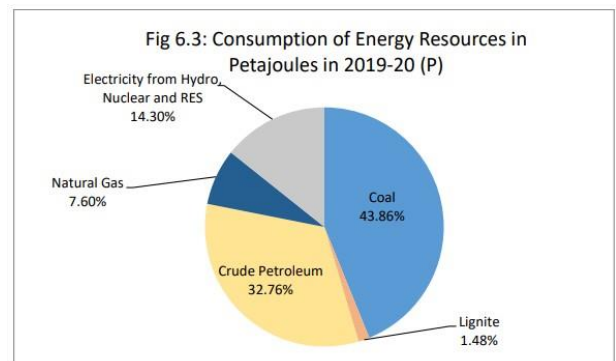
With the threat of climate change looming, nations have to relook and reconfigure their energy sourcing basket to ensure it is Clean and Green.

#### What is the status of energy consumption in India?

- According to **The Energy Statistics India 2021** report published by **MoSPI**, India is one of the largest producer and consumer of coal in the world.
- The consumption of energy from Coal and Lignite was highest which accounted for about 45.34% of the total consumption during 2019-20 followed by Crude Oil (32.76%) and Electricity (14.30%).

#### What efforts have been taken to diversify the energy basket?

- India has been carving out its own strategy to make energy produced from other sources including renewable more accessible.
- **Amendments to Energy Conservation Act, 2001** – It aims to enhance the demand for renewable energy at the end-use sectors such as industry, buildings, transport etc.
- It defines minimum share of renewable energy in the overall consumption by the industrial units or any establishment.
- There will be provision to incentivise efforts on using clean energy sources by means of carbon saving certificate.
- The proposed amendments would facilitate development of carbon market in India and prescribe minimum consumption of renewable energy either as direct consumption or indirect use through grid.
- This will help in reduction of fossil fuel based energy consumption and carbon emission to the atmosphere.
- **Bail-out option** - The government has tried the bail-out option – UDAY and the recent ₹900 billion injection into the Discoms.
- **Draft Electricity Act** - The government tried to plug the holes through
  - Direct Benefit Transfer
  - Cost reflecting tariffs
  - Mandatory filling of average cost of supply (ACS)-average revenue realised (ARR) annually
  - Contract enforcement
- **COP26 pledge** – In the CoP26, Prime Minister Narendra Modi announced enhanced targets for India to combat climate change.
  - Increase India's non-fossil fuel energy capacity to 500 gigawatt (GW) by 2030;





- By 2030, meeting 50 per cent of its energy requirements from renewable sources;
- Reducing its total projected carbon emissions by 1 billion tonne from now till 2030;
- Bring down the carbon intensity of its economy to less than 45 per cent by 2030;
- Achieving its target of net zero by 2070.

### **What are the challenges in successful implementation of the government measures?**

- The success depends on how the distribution utilities (Discoms) which are the weakest link in the power space respond to the reform measures.
- The Centre's earlier attempts at strengthening the distribution side has not really succeeded.
- Since the Centre has not involved the States and Discoms directly, successful deregulation of the sector is under suspicion.
- The government's bail-out option hasn't really made any change on the dues the Discoms owe to the power generators.
- The draft Electricity Act has also hit resistance from the Discoms.
- According to the Central Electricity Authority (CEA), in 2019, India, will increase the electricity generation from renewable to roughly 12% by 2021.
  - It means that India need to increase this further to meet the 50% electricity generation target by 2030.
- The solar energy installed capacity in the country has to go up to 280 GW and wind energy capacity to 140 GW to achieve the target set in the COP26 Summit.

### **What has to be done regarding the telecom sector?**

- Without fixing the health of the Discoms the solar target is tough to reach and process may not be easy.
- Capacity addition and the last mile connect are the twin objectives that needed focus.
- The other option is to take a route which eliminates the critical involvement of Discoms in the sale of power.
- The government is leaning towards trading of power (exchange-focused) but needs to keep a keen eye on it turning speculative.
- The government is trying to introduce the market mechanisms but that is new for the Indian power sector but it has to be understood to reach the lofty target by 2030.

## **2.2 Air India Privatisation**

### **What is the issue?**

Tata Sons' subsidiary Talace Pvt. Ltd. was the winning bidder for the 100% stake in Air India, the national carrier of India. Here is all about the transaction.

### **What is the Air India privatisation deal?**

- The government, in 1953, had taken control of the airline (founded as Tata Airlines) from the Tata Group in 1932.
- Air India is now sold back to the Tata group, reportedly for Rs. 18,000 crore. 20% over its reserve price plus aircraft debt of Rs.15,300 crore.
- The government has got a paltry Rs. 2,750 crore in cash and keeps a debt of Rs. 61,000 crore that is transferred out of Air India's books to another entity.
- Tata Sons will thus regain control of Air India, a first step in the Centre's mega privatisation push.

### **Notable features in the transaction**

- The enterprise valuation has been used to arrive at the bid value, which is the norm in M&A (Mergers and acquisitions) deals. The non-core assets of the company are not part of the sale.
- The non-core assets have been hived off to a special purpose vehicle, along with a part of the debt.
- [Air India owns valuable real estate in Mumbai, Delhi and other cities.
- It would have become controversial if these had been transferred to the buyer along with the core assets.]

### What were the challenges involved?

- Accumulated losses of minus Rs 44,000 crore of net worth
- Huge pile of debt despite continuous infusion of funds
- Powerful employee unions
- Sorry state of the airline industry globally, post-Covid

### Why is the move so significant?

- This time the government had kept itself open in terms of what the bidding parameters would be.
- The decision comes as a clear signal of the government's commitment to reforms and readiness to move ahead in sync with market realities.
- A transaction as "tough and complex" as Air India's in an open, transparent and competitive bidding process, will boost future privatisation.
- The bureaucracy can now focus on larger policy issues that plague the airline industry without worrying about running an airline.

### What is the future scope?

- Air India, despite its fall in recent years, still enjoys brand equity.
- It owns prized assets in the form of landing slots in airports across the world.
- It owns flying rights on some of the most sought-after routes.
- It's technical resources and staff are highly valued though the fleet itself may need modernisation.
- But the airline also comes with accumulated losses of about Rs 70,000 crore apart from the Rs.15,300 crore debt transferred in the sale.
- The Tatas will need to keep investing in the airline and also find a way to harmonise its functioning with their other two airline ventures.

### What led to Air India's downfall?

- **Ordering new fleet of 111 Boeing aircraft** in 2005-06 - A closer look reveals that the Boeing order was placed with the tacit approval of the then PM as a quid pro quo for waiver of NRC (Nuclear Regulatory Commission) action against India by the US Congress.
- Air India's miniscule equity capital was quickly wiped out, and with accumulated losses the airline's net worth turned negative.
- **Faulty aircraft configuration** - The long haul B777 and B747 aircraft had "vanity first class cabin" that was rarely filled.
- This added to its operating losses by an estimated Rs. 350-400 crore per year.
- **Inability to offer direct non-stop flights from major growth centres** - E.g. It forced passengers going from Kerala to the Middle East or from Bengaluru to the US to travel via Mumbai/Delhi, adding 8-16 hours to total travel time.
- **Heterogeneity of fleet** - Indian Airlines as well as Air India had historically used Airbus (A-319/320/321) fleet for short-haul services.
- Adding Boeing 737s for short-haul flights added to Air India's inventory costs and further training of the crew.
- **Forced (failed) merger between Air India and Indian Airlines** - These were merged in 2006-07 to facilitate better synergies of their resources.
- But resources, aircraft, men, material and machines remained divided, and the merger has remained only on paper.
- The merger without employee lay-offs simply magnified problems like excess manpower.
- **Rich employees** - Air India paid a heavy price for "buying peace" with unions during mid-1990s.
- Paying huge salaries to its pilots and aircraft maintenance engineers (AMEs) hit the airline hard.
- **Inability to face change** - The change brought in by liberalisation of the airline industry post 2005 had an impact.

- The reactive management style (instead of proactive) showed that Air India was poorly placed to face the challenges of liberalisation.
- Lack of customer focus, bad financial management, and firm unionised employees made things even worse.
- **Lack of professional management** - There was a lack of continuity or accountability of the top leadership.
- **Failure of asset monetisation** - Air India, during its golden days, invested in the entire aviation value chain.
- These assets were ill-managed and were later sold unprofitably.

## 2.3 Coal Shortage in India

### What is the issue?

India's thermal power plants are facing a severe coal shortage, with coal stocks having come down to an average of 4 days of fuel across an increasing number of thermal stations.

### What is the current status of coal stocks?

- Coal fired plants makeup nearly 70% of India's power source mix.
- On October 4, 16 thermal power plants with a power generation capacity of 17,475 MW (mega watts) had zero days of coal stock.
- An additional 45 thermal power plants with a power generation capacity of 59,790 MW had coal stock only for up to two days.
- It is way below the government recommendations of holding 14 days worth of coal stock.
- The non-pithead plants or plants which are not located close to coal mines have critical levels of stock i.e under 8 days.

### What is the reason behind India's coal shortage?

- **Increased power demand** - A sharp uptick in power demand as the economy recovers from Covid-19 pandemic coupled with supply issues have led to coal shortage.
- India consumed 124 billion units of power in August 2021 compared to 106 billion units of power in August 2019.
- **Supply crunches** - Lower than normal stock accumulation by thermal power plants in the April-June period is another reason.
- Continuous rainfall in coal bearing areas in August and September caused fewer despatches of coal from coal mines.
- **Fall in imports** - There has been sharp fall in imports due to high international prices.
- **Non-payments of coal dues** - The non-payments of coal dues by States such as Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh and Madhya Pradesh also resulted in inadequate supplies.

### What will be the impact of coal shortage?

- The electricity shortages could delay India's economic reopening.
- It might lead to downscaling of business productions.
- India's population and under developed energy infrastructure will mean the power crisis could hit long and hard.

### What measures is the government taking to address the situation?

- The Power Ministry has constituted a **Core Management Team** to monitor and manage the fuel on daily basis to improve supplies to power plants.
- Coal India, the state-owned miner claims that it has ramped up supplies to thermal power plants by nearly 12 per cent annually.
- The government is pressing thermal plants with captive coal mines to boost their coal output to meet their own demand.
- The Power Ministry is trying to expedite the start of production from a number of mines that already have all requisite clearances.
- The government has also boosted the number of rakes of coal being transported to thermal power plants daily.

## What is the way forward?

- State run Coal India and NTPC Ltd. can work together to raise the output from mines.
- India has to ramp its imports despite the financial cost.
- Advance preparation and ensuring sufficient stocks ahead of monsoons is a well known strategy.

## 2.4 Gati Shakti National Master Plan

### Why in news?

Prime Minister Narendra Modi has launched the ambitious Rs 100 lakh crore Gati Shakti Master Plan to provide multi-modal connectivity to more than 1,200 industrial clusters.

### What is Gati Shakti?

- The plan aims to transfer India into a hub of world class infrastructure by providing integrated and seamless connectivity for movement of people, goods and services.
- A digital platform will be created to bring 16 ministries including rail and roadways together for integrated planning and coordinated implementation of infrastructure projects.
- **Comprehensiveness:** It will incorporate the existing infrastructure schemes of different departments and state governments like Bharatmala, Sagarmala, inland waterways, UDAN etc.
- **Analytical** -It will offer 200 layers of geospatial data, including on existing infrastructure as well as geographic information about forests, rivers and district boundaries.
- **Dynamic:** The portal will allow various government departments to track the progress of various projects in real time and at one centralised place.
- **Prioritization:** Different Departments will be able to prioritize their projects through cross-sectoral interactions.
- **Optimization-** For the transportation of goods from one place to another, the plan will help in selecting the most optimum route in terms of time and cost.
- **Synchronization:** PM GatiShakti will help in synchronizing the activities of each department in a holistic manner by ensuring coordination of work between them.
- The project will be spearheaded by the logistics division in the commerce ministry and the implementation will be monitored by a monitoring group under the Department for Promotion of Industry and Internal Trade (DPIIT).

### What are the targets to be achieved under Gati Shakti?

- 11 industrial corridors and two new defence corridors in Tamil Nadu and Uttar Pradesh
- 4G connectivity in all villages
- Increasing renewable energy capacity to 225 GW from 87.7 GW
- Expanding the national highway network to 2 lakh km
- Increasing length of transmission network to 4,54,200 circuit km
- Creation of 220 new airports, heliports and water aerodromes
- Increasing cargo handling capacity of railways to 1,600 million tons from 1210 million tons
- Adding 17,000 km to gas pipeline network
- 202 fishing clusters/harbours/landing centres and more

### What are the existing challenges in the infrastructure creation?

- Lack of coordination between different Departments
- Wasteful expenditure
- Time-taking approval process
- Multiplicity of regulatory clearances
- Hostile land acquisitions

- Difficulties in getting environmental clearance

### What will be the benefits of the Gati Shakti plan?

- The plan aims to build Next Generation Infrastructure which will improve Ease of Living as well as Ease of Doing Business.
- It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people.
- It will provide the public and business community information regarding the upcoming connectivity projects, other business hubs, industrial areas and surrounding environment
- The plan enables the investors to plan their businesses at suitable locations leading to enhanced synergies.
- It will create multiple employment opportunities and give a boost to the economy.
- It will improve the efficiency of port operations and cargo handling capacity and cut the vessel turnaround time.
- Studies estimate that logistics costs in India are about 13-14% of GDP as against about 7-8% of GDP in developed economies.
- The plan will improve the global competitiveness of local products by cutting down the logistics costs and improving the supply chains.

## 2.5 Indian Ports Bill 2021

### Why in news?

Maritime States (Tamil Nadu, Kerala, Andhra Pradesh, Odisha and Maharashtra) have expressed dissatisfaction over the Indian Ports Bill 2021.

### What is the bill about?

- The Indian Ports Bill 2021 seeks to replace more than a century old Indian Ports Act 1908.
- The new Bill incorporates international regulatory developments in the national legislation namely the -
  - International Ship and Port Facility Security (ISPS) Code 2004
  - International Convention for the prevention of pollution from ships (MARPOL) (1983, 2005)
  - International Ballast Water Management (BWM) convention (2017)

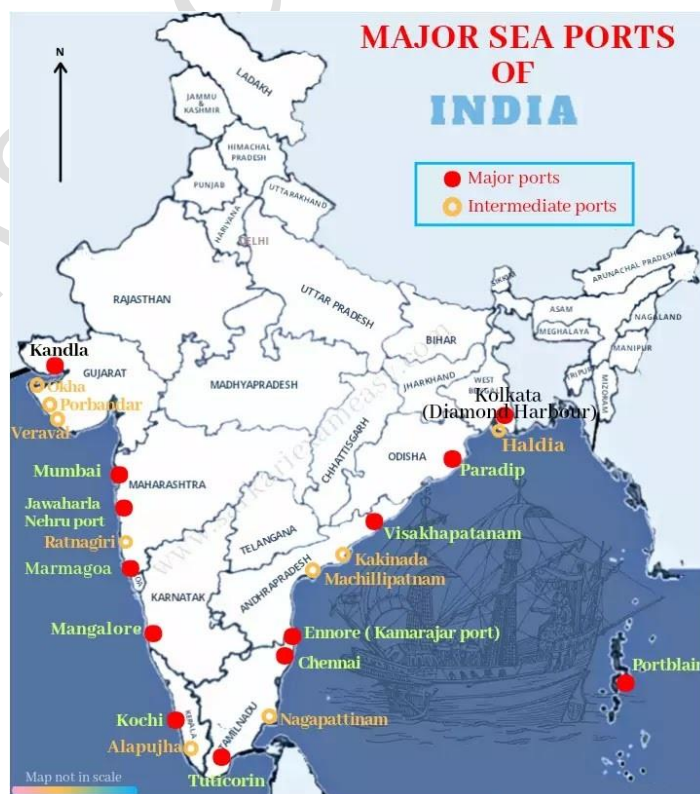
### What are the welcome features?

- The Bill mandates port authorities to provide adequate "reception facilities" to ships to dispose of their waste.
- It contains provisions for the safety and security of ports and for the prevention and containment of pollution at ports.
- These provisions will apply to all ports in India (major and non-major ports).
- The ports are required to prepare a "Security Plan" and a waste reception and handling plan.
- The Ports will also be subject to periodic audits by the Union government to ensure compliance.

### What are the contentious provisions?

#### Maritime State Development Council

- The Council will be established by the Centre with the Union Minister of Ports, Shipping and Waterways as the Chairperson.
- The Ministers in charge of ports in the Maritime States will be the members.





- It also includes the Secretary and Joint Secretaries of the Ministry dealing with ports.
- But neither the State Maritime Boards nor expert members on port administration and trade interests find a place in the Council.
- The Bill also proposes to make the Council a permanent body with wide-ranging powers to -
  - i. formulate a national plan for development of existing and new ports and revise the plan periodically
  - ii. monitor the development of major and non-major ports to ensure their integrated development with the national plan

#### **Powers**

- The Union government can make a port non-operational if it is not in consonance with the national plan.
- Heavy penalties for administrative lapses on Port authorities and officials ranging from Rs. 50,000 to Rs. 2 lakh or imprisonment up to 6 months or both.
- The excessive authority and power concentrated in the Union government relegate the maritime States into a secondary position.

#### **What is the changing trend with Indian ports?**

- India has 12 major ports and about 212 non-major ports.
- Major ports come under the direct control of the Centre.
- All non-major ports come under the control of the respective State governments.
- In 2000-01 Indian ports handled total traffic of 369 million tonnes, with 76% share with major ports and 24% with non-major ports.
- In 2020-2021 the total traffic handled at Indian ports reached 1,250 million tonnes.
- But the share of major ports declined to 54% while that of non-major ports increased to 46%.
- In this line, by 2030 non-major ports could overtake the major ports in cargo handling.
- Clearly, the maritime State governments will be the main driving force to effect such developments.

#### **What does this call for?**

- Port handling requires more decentralization.
- India's maritime States have, in the past, executed a number of port development projects successfully.
- E.g. Mundra Port, handling the highest volume of cargo (144.4 MT in 2020-2021), has been developed on a concession granted by Gujarat Maritime Board.
- Krishnapatnam, Kakinada and Gangavaram ports have been developed on a concession by the Andhra Pradesh Maritime Board.
- So, the Centre must step back and give more autonomy to States.
- Major ports can offer "brownfield sites" while the Maritime States can offer "greenfield sites" for development.
- The Union government should thus take the Maritime States with it as equal partners in the growth and development of ports in India.

### **3. AGRICULTURE**

#### **3.1 Repeal of Farm Laws**

##### **What is the issue?**

Prime Minister Narendra Modi has announced the repeal of the three contentious farm laws which had witnessed protests from farmers, mainly from Punjab and Haryana for more than a year.

##### **What is the status of agriculture sector in India?**

- As per MOSPI data, the share of GVA of Agriculture and Allied sector to total economy in 2020-21 is **20.2%**.
- The small and marginal holdings constitute almost **90%** of our total agricultural land holdings.

- The top 10% of the households are today cultivating almost 50% of India's total cultivable lands whereas the bottom 50% are cultivating less than 0.5 % of India's cultivable lands.
- Almost two thirds of Indian agriculture is rainfed.
- The income levels of farmers on an average have come down to roughly Rs. 9,000 per month per various government reports.

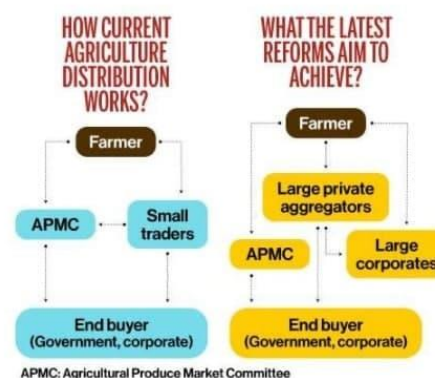
### What were the farm laws that have been repealed?

#### The Farmers Produce Trade and Commerce (Promotion and Facilitation) Act, 2020

- The act aimed at allowing trade in agricultural produce outside the existing APMC (Agricultural Produce Market Committee) mandis.
- It seeks to provide for the creation of an ecosystem where the farmers and traders have the choice relating to sale and purchase of farmers' produce.
- This facilitates remunerative prices through competitive alternative trading channels.
- It thus promotes efficient, transparent and barrier-free inter-State and intra-State trade and commerce of farmers' produce.
- The produce will have a reach outside the physical premises of markets or deemed markets notified under various State agricultural produce market legislations.
- It will also provide a facilitative framework for electronic trading.
- It will also help farmers of regions with surplus produce to get better prices and consumers of regions with shortages, lower prices.

#### CHANGING LANDSCAPE

The new bills aim to strengthen the link between farmers and market forces



#### The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Act, 2020

- The act seeks to provide a framework for contract farming.
- It thus seeks to protect and empower farmers to engage with agri-business firms, processors, wholesalers, exporters or large retailers.
- They can take up farm services and sale of future farming produce at a mutually agreed remunerative price framework.
- It will also enable the farmer to access modern technology and better inputs.
- It will reduce the cost of marketing and improve income of farmers.
- Farmers will engage in direct marketing thereby eliminating intermediaries resulting in full realization of price.
- Effective dispute resolution mechanism has been provided for with clear time lines for redressal.

#### The Essential Commodities (Amendment) Act, 2020

- The Act seeks to remove commodities like cereals, pulses, oilseeds, edible oils, onion and potatoes from the list of essential commodities.
- This will remove fears of private investors of excessive regulatory interference in their business operations.
- The freedom to produce, hold, move, distribute and supply will lead to harnessing of economies of scale and attract private sector/foreign direct investment into agriculture sector.

### What is the need for implementation of the three laws?

- **Agricultural Marketing** - There were restrictions for farmers in selling agri-produce outside the notified APMC market yards.
- The farmers were also restricted to sell the produce only to registered licensees of the State Governments.
- Further, barriers existed in free flow of agriculture produce between various States owing to the prevalence of various APMC legislations enacted by the State Governments.
- **High Risks** - Indian agriculture is characterized by fragmentation and the average operational farm size in India today stands at 1.13 hectares.

- It has certain weaknesses such as weather dependence, production uncertainties and market unpredictability.
- This makes agriculture risky and inefficient in respect of both input and output management.
- In this context, a legislation is needed to transfer the risk of market unpredictability from the farmer to the sponsor.
- **Price instability** - India has become surplus in most agri-commodities but farmers have been unable to get better prices due to lack of investment in cold storage, warehouses, processing and export.
- Farmers suffer huge losses when there are bumper harvests, especially of perishable commodities.
- There needs a law that will help both farmers and consumers while bringing in price stability.
- There is a need to create competitive market environment and to prevent wastage of agri-produce that happens due to lack of storage facilities.

## How new bills will help farmers!

Source: <https://www.businessstoday.in/current/economy-politics/infographic-farm-bills—the-hot-potato/story/419144.html>

FARMERS' PRODUCE TRADE AND COMMERCE (PROMOTION AND FACILITATION) BILL, 2020	FARMERS (EMPOWERMENT AND PROTECTION) AGREEMENT ON PRICE ASSURANCE AND FARM SERVICES BILL, 2020	ESSENTIAL COMMODITIES (AMENDMENT) BILL, 2020
<p><i>Allows farmers and traders to sell and purchase farmers' produce through alternate channels outside regulated Agricultural Produce Market Committee (APMC) markets without paying fees or levies to the state government</i></p> <p><b>How will it help?</b></p> <ul style="list-style-type: none"> <li>• Removal of barriers for intra/inter-state business</li> <li>• Farmers can sell their product to anyone from anywhere</li> <li>• Seamless electronic trade</li> <li>• Encourages ending monopoly of traders</li> <li>• Increased competition among consumers or buyers</li> <li>• Farmers get better return thus increasing income</li> <li>• Free movement of agro products from surplus to deficit regions</li> <li>• Creates a unified national market</li> <li>• End consumer gets better products at cheaper prices</li> </ul>	<p><i>National framework for contract farming agreements with agri-business firms, processors, wholesalers, exporters or large retailers for farm services and sale of future farming produce at a mutually agreed remunerative price</i></p> <p><b>How will it help?</b></p> <ul style="list-style-type: none"> <li>• Farmers could enter into agreements with large buyers, retailers and exporters</li> <li>• Farmers know the price even before sowing</li> <li>• Market risk gets transferred to sponsor from farmers</li> <li>• High-quality seeds, pesticides and fertilisers can be availed by the farmers</li> <li>• Increased interest of private investors in farming</li> <li>• A door to the global market</li> </ul>	<p><i>Takes out most food items from list of essential commodities</i></p> <p><b>How will it help?</b></p> <ul style="list-style-type: none"> <li>• Pulses, onion, potatoes, oilseeds, cereals, and edible oils, etc. are removed from essential commodities list</li> <li>• Except under unusual circumstances, it does away with the imposition of stock limit</li> <li>• Business and traders get rid of harassment</li> <li>• With the improvement of storage facilities, the wastage is likely to get reduced</li> <li>• Aims for a stable price which will eventually help in raising farm incomes</li> </ul>

### Why were the reasons for opposition against the farm laws?

- **APMC mandis** - Farmers feared that the existing APMC mandis where they sell their produce would be shut down once private players started trading in agri-produce outside the mandi premises.
- **MSP demand** - MSP matters more in the states of Punjab and Haryana where the government purchases over 80% of wheat and rice output for NFSA supply.
- There has been fear that that once the APMC mandi system became redundant, procurement based on MSP too would come to an end leading to demands of legal backup for MSP.
- Also, the government fixes MSP at 1.5 times the cost of production using A2 formula of calculating cost of production.
- But farmers are demanding the government to rely on C2 formula as recommended by the **National Commission for Farmers** headed by agricultural scientist **M S Swaminathan**.

*'A2' covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.*

*A2+FL' includes A2 plus an imputed value of unpaid family labour.*

*'C2' is a more comprehensive cost that factors in rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL.*

- **Cooperative federalism** - Agriculture and markets are State subjects – entry 14 and 28 respectively in List II.
- So the farm legislations are being seen as a direct encroachment upon the functions of the States against the spirit of cooperative federalism enshrined in the Constitution.
- The Centre, however, argued that trade and commerce in food items is part of the concurrent list.

- **No mechanism for price fixation** - The Price Assurance Act does not prescribe the mechanism for price fixation.
- There is apprehension that the free hand given to private corporate houses could lead to farmer exploitation.
- Farmers are apprehensive about formal contractual obligations owing to the unorganised nature of the farm sector.
- There is also the lack of resources for a legal battle with private corporate entities.
- **Food security** - Easing of regulation of food commodities in the essential commodities list would lead to hoarding of farm produce during the harvest season when prices are generally lower.
- This could undermine food security since the States would have no information about the availability of stocks within the State.
- **Method of implementation** - The government initially cleared them as ordinances with haste that ignited the protests.
- The communication to the people, in general, and farmers, especially added to the issue.
- The demand for scrutiny of the Bills by a parliamentary panel was dismissed and the government rushed the passage of legislation.

#### What were the consequences of the passage of the farm acts?

- The sporadic protests against the farm laws later expanded to a nationwide road blockade where farmers' unions in Punjab and Haryana gave a call for a 'Delhi Chalo' movement.
- The protests that began in Punjab moved to the outskirts of the national capital and involved farmers from Punjab, Haryana, Rajasthan, western Uttar Pradesh and Madhya Pradesh.
- 11 rounds of talks were held between the government and representatives of farmer leaders between October 14, 2020 and January 22, 2021 but yielded no result.
- In January 12, 2021, the Supreme Court stayed the implementation of the three laws and since the stay, the laws have been suspended by the government.

#### What features have got lost in the outcry of protest?

- **Elimination of Cartelisation** – The act aimed to prevent the pressure under which the farmers were put by the trader cartels.
- A few big traders with well-connected networks played a big role in markets disrupting the fair pricing mechanism.
- **Solving the middlemen issue** - The farmers were at the mercy of the presidents of APMC yards who were more powerful than village and wielded political clout.
- The act gave farmers choices of selling their produce beyond the APMCs.
- **Product quality** - The quality of the produce has been a point of dispute between traders and farmers and the act ensured farmers to take their produce to any part of the country or sell to anyone with whom they were comfortable in case of such dispute.
- **Contract farming** - The Price Assurance Act enabled contract farming where the buyer couldn't have backed off after entering into an agreement but its impact was lost in the political outcry.
- **Distress sale** - The objective of Essential Commodities Act's amendment was to ensure that farmers didn't have to resort to distress sale.
- This amended provision too got buried in the sand of protests.
- **Strengthening the output side** - It was for the first time that any government at the Centre focussed on strengthening the output side of farming.
- These reforms would have looked at agriculture as a business and focussed on agri-produce marketing.

#### What does the repeal indicate?

- The repeal underlines that any future attempts to reform the rural agricultural economy would require a much wider consultation, not only for better design of reforms, but for wider acceptance.
- What the agrarian structure needs is a New Deal, an assurance that the farmers' interests would not be hitched to immediate compulsions of interest groups, be it political or corporate.



### 3.2 How to Define a Farmer?

#### What is the issue?

Categorising farmers based on dependence on farm income and land ownership has stirred debates.

#### What is the categorisation about?

- The Agriculture Census for 2015-16 placed the total operational holdings in India at 146.45 million.
- National Statistical Office's Situation Assessment of Agricultural Households (SAAH) report for 2018-19 pegs the country's agricultural households at 93.09 million.
- This wide variation has largely to do with methodology.
- The Agriculture Census looks at any land used even partly for agricultural production and operated/managed by one person alone or with others. The land does not have to be owned by that person (cultivator), who needn't also belong to an agricultural household.
- The SAAH report considers only the operational holdings of agricultural households.
- While the Census treats each of them as separate holdings, the SAAH takes all these lands as a single production unit.
- Those households whose net receipts from farming are at least 50 per cent of their total income from all sources are categorized as **full-time/regular farmers**.
- The mention of minimum land (more than 1 hectare or 2.5 acres) required for farming to be viable excludes about 70 per cent of agricultural households in the country which they do not possess.
- There is a suggestion that the agricultural policy should target only serious/regular farming households as they genuinely depend on farming.

#### What are the flaws of the above-mentioned categorisation of farmers?

- The categorization of farmer based on a single ratio of farm income dependence and a threshold of 50 per cent ignores the differential historical trajectory of development and livelihood diversification in diverse regions of India.
  - For example, while remittances often constitute a major portion of household income in states like Kerala, it does not make small-scale spice cultivators or rubber growers any less serious.
- Farmers are not a homogenous category and a more realistic category of rich/middle/poor farmers or capitalist/petty-producer/agricultural labour is needed to identify those engaged in agriculture.
- The contribution to national production of 70 % of farmers possessing less than 1 hectare of land is under question.
- Forcing marginal farmers out of agriculture would be disastrous from the perspective of household-level food and nutrition security.
- Withdrawing state support to smallholders will have a disproportionate impact on the socially marginalised groups and would further push them into asset poverty.
- If 70% of agricultural households are identified as non-serious farmers, there lies a question of who should be moved out of agriculture and what happens to their land resources.
  - Huge land reserves will be immediately opened for corporate grabbing laying the foundation for agribusiness monopolies.
- Agriculture functions as a social safety net in providing a source of sustenance to millions and thereby providing conditions of relatively stable growth in productive sectors of the economy.
  - The crisis faced by migrant workers during the lockdown and the phenomenon of reverse migration is a testimony to the fact that agriculture continues to provide a buffer to millions who face intermittent unemployment.

#### What will be the solution to the problem of Indian farmers?

- The SAAH data also shows a fall in real average crop incomes between 2013 and 2019 which is driven by rising input prices and dwindling output prices.
- Smallholders rely more on informal sources of moneylending, which adds to indebtedness.
- Forced destruction of the livelihoods of millions of smallholders by withdrawal of the little they receive by the way of state support will be a recipe for disaster.



- The solution to the problem of Indian farmers needs a serious rethink of the economic policies and surely cannot lie in simply excluding them by redefinition.

### 3.3 Need for Procurement Reforms

#### What is the issue?

Due to the government's policy of open-ended procurement at MSP, the Food Corporation of India (FCI) suffers from a problem of excess.

#### What is the level (excess) of FCI holding?

- In October 2021, FCI was holding 86 million tonnes of grains (including unmilled paddy) against a buffer requirement (October 1) of 30 million tonnes.
- Notably, the annual requirement of foodgrains for distribution under the National Food Security Act is only 65 million tonne.
- While there is increased procurement of grains, the off-take has not moved much over the past 5-6 years.

#### What are the concerns?

- Such massive procurement is wasteful, given the lack of storage capacity.
- It also risks making India's procurement for food security seem market-distortionary.

#### What are the FCI's measures?

- The FCI has been conducting open market auctions for part of its excess holdings.
- But this is hardly enough to take care of the problem of the excess.
- A "micro-analysis of state-wise requirements and buffer norms" is being done by the FCI.

#### What are the government measures?

- Given the pandemic induced income losses, the government gave beneficiaries a fixed quantity of extra grains, over the NFSA entitlement, under the Garib Kalyan Anna Yojana.
- This raised the off-take from 65 million tonnes annually to 93 million tonnes.
- If the pain from job-losses in the unorganised sector is prolonged, the government may still be able to justify such a move. But it is less likely to happen.

#### Is export an option?

- Export is obviously not an option to liquidate the excess stock.
- Because, WTO norms against market-distortion would come in the way.

#### What could be done?

- Paddy/rice seems to be the main reason (especially procurement from Punjab) with untold economic and environmental consequences.
- The Centre and Punjab must work together to incentivise the state's farmers to switch from paddy to maize and even fruit and vegetables.
- The government can also consider limiting open-ended procurement, say, by capping procurement as per size of individual land-holding.
- Another option is moving from price-support to a pure cost-support regime; but this will need significant political will.
- Government can also donate surpluses to food programmes locally and overseas. But, without reforms, FCI's burden will only grow.

### 3.4 Demand for Legal Guarantee on MSP

#### What is the issue?

With continuous demands on a legal mandate for minimum support prices (MSP), Prime Minister Narendra Modi has announced the setting up of a panel to deal with issues concerning MSP.

### What is MSP?

- MSPs are the prices at which the government promises to procure agricultural produce from farmers.
- At present, the government announces MSPs for 23 crops – 7 cereals, 5 pulses, 7 oilseeds and 4 commercial crops.
- MSPs are announced by the government at the beginning of the sowing season on the basis of the recommendations of the **Commission for Agricultural Costs and Prices (CACP)**.
- MSP is then approved by **Cabinet Committee on Economic Affairs** to protect the farmers against excessive fall in price during bumper production years.
- At present there is no legal compulsion for the government to procure the crops at MSP.

### What are the problems of providing statutory backup to MSP?

- India has had MSPs for several crops for several decades now, but that has not resolved the problem of agrarian distress.
- Guaranteed MSP can have quite a few unintended consequences such as increased production with low demand, similar to the Carter's dairy support programme in the U.S.
- MSPs are short-term measures and are not a sustainable solution for all of Indian agriculture.
- The already procured grain stocks lying with the government are more than twice its buffer requirement and sometimes end up rotting.
- If MSP were to be extended to 23 crops, the annual budgetary support of Rs.1.3 lakh crore will have to be multiplied several times over.
- Also, the price support is restricted to the regions of Punjab and Haryana and skewed in favour of few crops such as paddy and wheat.
- Paddy cultivation is promoted in dry, non-rainfed regions creating water scarcity with monoculture adding to pest and disease incidences.
- It has been said that if MSP becomes law, then big farmers will take produce from small farmers and sell them to the government and this will put small farmers in more trouble.
- In making the MSP mandatory, there will be difficulties regarding the quality of the crop, because the government has to decide which quality will be procured at MSP, and what will be the rate for the poor quality, and who will buy it.
- The state agencies have to end up buying almost everything and will need to resort to Open Market Sales at lower prices while traders will buy from FCI at a lower price and make a profit with the government losing huge sums of money.

### What is the significance of constituting MSP panel?

- It marks the Centre's resolve to keep the farm reform agenda alive despite the resolute opposition by farmers from Punjab, Haryana and Uttar Pradesh.
- The intent to include Central and State government representatives, farmers, scientists and economists on the panel will add to its credibility.
- It should be perceived as an apolitical body that is open to consultations.
- Its task is on three aspects of the reforms
  - Introducing private wholesale markets
  - Removing stockholding limits
  - Promoting contract farming

### How can the agrarian distress be addressed?

- **Boosting investment and infrastructure** - The focus in agriculture should be on boosting investment, infrastructure and marketing.
- Better irrigation facilities, easier access to credit, timely access to power, creating lots of warehouses, and ramping up of extension services including post-harvest marketing is the need of the hour.
- **Boosting India's industrial and services sectors** - These sectors can absorb the excess labour engaged in extremely unremunerative farm activities and provide them with well-paying jobs.

- Since agriculture accounts for just 17% of India's GDP while employing 55% of its population, the solution to the economic distress of Indian farmers lies outside agriculture.
- **Direct income support** - Instead of arbitrarily fixing prices of goods in the market, the more effective way might be to provide direct income support to the poor farmers.
- **Promote innovation** - The harsh truth is that the young do not see farming as a viable occupation and are fleeing to cities.
- The average income of a farmer can double from Rs. 9,000 a month over the next few years only by creating opportunities for innovation.

### 3.5 How Punjab can Shine Again with Nutritional Security and Climate-friendly Agriculture

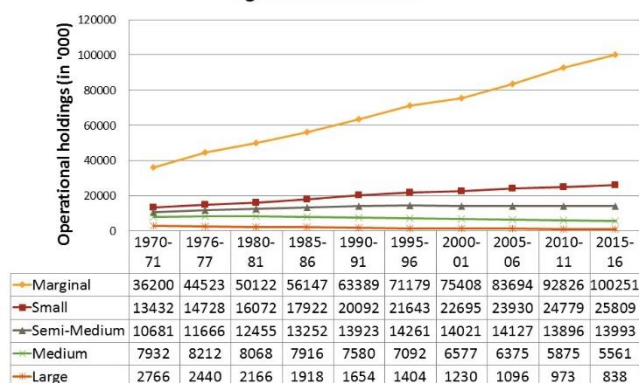
#### What is the issue?

Farmers in Punjab and Haryana are completely dependent on cereal crops such as paddy and wheat that poses huge threat to the ecosystem and nutrition security.

#### What is the status of agriculture in Punjab?

- As per the latest Situation Assessment Survey (SAS) of agricultural households conducted by the National Statistical Office (NSO), an average Indian farmer earned Rs 10,218 per month in 2018-19.
- The highest income was received by a farming household in Meghalaya (Rs 29,348) followed by Punjab (Rs 26,701).
- If we normalise incomes of agri-households using the average holding sizes, Punjab's rank would go down to 11<sup>th</sup>.
- This implies that farmers in Punjab are earning higher incomes primarily because the size of their landholding is greater compared to other states.
- As per the recent Agriculture Census, the average size of operational holdings in India has decreased from 2.28 hectares in 1970-71 to 1.08 hectares in 2015-16.
- In Punjab, the rice cultivation is depleting the state's water table, emitting methane and other greenhouse gases and stubble burning is choking millions.

Number of operational holdings as per different Agriculture Censuses



The Department of Agriculture, Co-operation and Farmers Welfare conducts agriculture census every five years.

It has been conducted since 1970-71 following broad guidelines of decennial World Census of Agriculture (WCA) evolved by FAO.

It is a Central Sector Plan Scheme and so far 10 censuses have been conducted in the country.

#### How can farmers in Punjab augment their incomes with more sustainable agriculture?

- **Fund for switching to maize cultivation** - Punjab's idea to create a fund of around Rs 25,000 crore to help farmers switch from paddy to maize has to be focused with certain modifications.
  1. The fund should be under a five-year plan to shift at least a million hectares of paddy area to maize.
  2. The corpus should have equal contributions from the Centre and state.
  3. The Maize Corporation of Punjab (MCP) should be created to buy maize from farmers at MSP.
  4. MCP should enter into contracts with ethanol companies to absorb the surplus in maize production.
  5. The best seeds should be used to enhance the maize productivity.
- **Crop diversification** – More focus has to be given to fruits, vegetables, livestock and fisheries.
- It has to be backed by proper processing, grading and packaging infrastructure to tap its full potential.

#### How is this plan beneficial to Punjab farmers?

- The plan aids in achieving the government's target of 20 per cent blending of ethanol in petrol by 2030 and will also reduce GHG emissions in vehicular pollution.

- Punjab will arrest its depleting water table as maize needs less than one-fifth the water that paddy does for irrigation.
- Punjab will save much on the power subsidy to agriculture as paddy irrigation consumes much of the power subsidy.
- There will be lesser methane emissions and less stubble burning.
- This could result in a win-win situation for all — farmers, the Government of Punjab and the country
- The SAS data shows that the profitability is much higher in fruits and vegetables than in crop cultivation.
- Also, the horticultural crops and livestock ensure nutritional security in line with sustainable and climate-resilient agriculture.

### 3.6 The New Wave of Agritech must Respect Traditional Farmers' Knowledge

#### What is the issue?

With the emergence of agri-tech unicorns in the digital revolution in agriculture, farmers' traditional knowledge are often neglected or exploited.

#### What is the role of the Agri-tech start-ups in the digital revolution?

- The internet penetration of about 32 % provides the basis for the growth of digital platform-based enterprises.
- Agri-tech start-ups aim to address the knowledge gaps among the farmers.
- They provide goods and services to farmers, such as access to quality inputs, and reasonably priced credit.
- Several start-ups are providing various value chain services. ITC's e-Choupal and related one-stop retail formats were considered as precursors to the digital revolution in agriculture.
- On the output side, start-ups are working to reduce the farm-to-fork gap, enhance market access and bargaining power of smallholder farmers.

*e-Choupal is an initiative by ITC Limited that provides Internet access to rural farmers to enable them to order supplies, learn about best agricultural practices, receive weather reports and read about pricing for crops throughout the region.*

#### What efforts have been made by the Government in this respect?

- **Use of technology** - The government has taken steps to create a farmers' and land ownership database.
- The Digital India Land Records Modernization Programme, Unique Land Parcel Identification Number (ULPIN), etc. were the efforts taken in this direction in this direction.
- **India Digital Ecosystem of Agriculture (IDEA)** - The government has released a consultation paper on the IDEA that would place the farmer in the centre of the agriculture ecosystem leveraging open digital technologies.

#### What are the benefits of inculcating technology in agriculture?

- Provision of agri related information
- Increased productivity
- Reduces the risk of farmers
- Aids in precision farming
- Reduce the incidence of benami properties
- Reduce the incidence of protracted land disputes
- Enable farmers to use their assets to access institutional finance
- Reduce the challenges banks face in conducting due diligence before advancing agricultural loans.

#### What are the challenges in the emergence of agri-tech startups?

- Privacy and security concerns
- Issues of exploitation of farmers

- Unfair appropriation of traditional community knowledge – [PepsiCo India Holdings](#) had earlier sued 11 farmers for illegally growing and selling a potato variety registered in the company's name.
- Absence of checks and balances - The previous experience with attempts to patent Indian Basmati, Neem, and Turmeric by MNCs provides for little confidence.
- Data can be used as an instrument of coercion, manipulation, and control

### How to balance the conservation of traditional knowledge and the growth of agri startups ?

- The awareness about the Protection of Plant Variety and Farmers Right Act (PPVFR Act) that aims to achieve a delicate balance between farmers' and breeders' rights has to be enhanced.
- The Traditional Knowledge Digital Library (TKDL) such as e-Kutir and Geographical Indications initiatives have to be strengthened.
- eKutir is a for-profit social enterprise group that provides economically sustainable solutions anchored with technology, micro-entrepreneurship, and community engagement.
- Farmer-owned cooperatives and producer companies have to be enabled to function as custodians of intellectual property and traditional knowledge of farming communities.
- There is a need for other complementary interventions and appropriate safeguards against inequitable appropriation of traditional knowledge.
- India needs to ensure that the digital push enables the transition towards decreased resource intensity or costs of agriculture, enhanced crop diversification, and nutritional security, and increased farmers' income.

## 3.7 Improving Livestock Breeding

### What is the issue?

The largely unorganised nature of livestock breeding in India had its impact on the quality of livestock and on the return on investment for farmers.

### What is the status of livestock sector in India?

- India is the world's largest producer of milk and third largest producer of egg.
  - As per the Economic Survey-2021, the contribution of livestock in total agriculture and allied sector GVA (at Constant Prices) has increased to 28.63% in 2018-19.
  - Approximately 200 million Indians are involved in livestock farming, including around 100 million dairy farmers.
  - Roughly 80% bovines in the country are low on productivity and are reared by small and marginal farmers.
- World's highest livestock owner at about 535.78 million
  - First in the total buffalo population in the world - 109.85 million buffaloes
  - Second in the population of goats - 148.88 million goats
  - Second largest poultry market in the world
  - Second largest producer of fish and also second largest aquaculture nation in the world
  - Third in the population of sheep (74.26 millions)
  - Fifth in the population of ducks and chicken (851.81 million)
  - Tenth in camel population in the world - 2.5 lakhs

Source : 20th Livestock Census

### What measures have been initiated to enhance the productivity of India's livestock?

Operation Flood which was launched in 1970 by National Dairy Development Board (NDDB) transformed India from a milk-deficient into the world's largest milk producer. **Dr Verghese Kurien** was the architect of Operation Flood.

- **National Livestock Mission (NLM)** - The mission commenced from 2014-15 with the objective of sustainable development of the livestock sector.
- It focuses on entrepreneurship development and breed improvement by providing incentives to individual entrepreneurs, FPOs, farmer cooperatives, joint liability groups, SHGs, etc.
- It is being implemented as a sub scheme of White Revolution - Rashtriya Pashudhan Vikas Yojana since April 2019.
- The mission is organised into four sub – missions
  1. Sub -Mission on Livestock Development
  2. Sub - Mission on Pig Development in North-Eastern Region
  3. Sub - Mission on Feed and Fodder Development
  4. Sub -Mission on Skill Development, Technology Transfer and Extension



- The poultry entrepreneurship programme will provide capital subsidy up to Rs. 25 lakh for setting up of a parent farm with a capacity to rear 1,000 chicks.
- In sheep and goat entrepreneurship, there is a provision of capital subsidy of 50% up to 50 lakh.
- For piggery, the NLM will provide 50% capital subsidy of up to Rs. 30 lakh.
- These efforts are to promote entrepreneurship, increase the employment opportunities and to enhance the productivity.
- **Rashtriya Gokul Mission** – It was initiated in 2014 with a focus on the conservation and development of indigenous breeds and improve their genetic makeup.
- The scheme is implemented on 100% grant-in-aid basis.
- The components include
  1. Establishment of integrated indigenous cattle centres - Gokul Gram
  2. Establishment of breeder's societies - Gopalan Sangh
  3. Gopal Ratna award to Farmers and Kamadhenu award to breeders' societies
  4. National Kamdhenu Breeding Centres are being established as Centres of Excellence
  5. Provision for capital subsidy up to Rs. 200 lakh for setting up breeding farm with at least 200 milch cows/ buffalo using latest breeding technology.
  6. **E-Pashu Haat**- An e-market portal connecting breeders and farmers to provide quality- disease free bovine germplasm
  7. **Pashu Sanjivni**: An Animal Wellness Programme with the provision of animal health cards along with UID identification
- Indigenous cow breeds include Gir, Sahiwal, Rathi, Deoni, Kankrej, Tharparkar, Red Sindhi, Kangeyam, Ongole, etc.
- Indigenous buffalo breeds include Murrah, Jaffrabadi, Pandharpuri, Mehsana, etc.
- **e-Gopala** - It is a web application that provides real-time information to livestock farmers on the availability of disease-free germplasm in relevant centres, veterinary care, etc.
- **National Animal Disease Control Programme** – It was launched in 2019 to control and eradicate the Foot & Mouth Disease (FMD) and Brucellosis amongst the livestock
- **Animal Husbandry Infrastructure Development Fund (AHIDF)** – The fund has been set up with an outlay of Rs. 15000 crore under AtmaNirbhar Bharat Abhiyan stimulus package.
- It aims to incentivize the investments to establish dairy and meat processing and value addition infrastructure and animal feed plants.

### 3.8 Animal husbandry needs Attention

#### What is the issue?

The pattern of global consumption is evolving towards higher share of animal products in diets focussing on the need for a proper and reliable dairy and poultry ecosystem.

#### What is the status of dairy and poultry sector?

- India is the world's largest producer of milk and third largest producer of egg.
- By 2022-23, milk production will expand to 235 million tonnes (from 198 mt in 2019-20) and egg production to 136 billion (from 114 billion in 2019-20).
- The protein meal demand is set to rise by 3 per cent per annum next 10 years. And by 2030, poultry meat will represent 41 per cent of all protein from meat sources.
- Consumers are attracted to poultry meat for lower price, product consistency and higher protein/lower fat content.
- In 2020, total milch cattle population was up by 10.5 per cent to 74.6 million in 2019.

#### What are the challenges in this sector?

- Disease outbreaks, sanitary restrictions and trade policies are the major challenges in the world meat market.

- Challenges in sourcing raw material for feed such as land constraint, water shortage, climate change, low crop yields, lack of tech infusion, policy constraint, etc adds to the issue.
- Maize and protein meal (oilseed extractions) will constitute 60 per cent of total feed use by 2030, according to OECD-FAO and the feed demand for maize is set to grow by 1.4 per cent per annum.
- Unreliability of feed supply, feed price volatility, demand fluctuation, policy environment, etc. are some of the issues.
- The biggest challenge to animal protein will come from the emerging plant protein segment.
- Livestock sector contributes around 54.6 % of total agricultural emissions in India adding to global warming.

#### How to address these challenges?

- Feed intensification at the rate of 2.4 per cent is needed to meet the feed demand growth of the next 10 years.
- Animal feed market will have to be part of '**Sustainable Animal Agriculture Ecosystem**'.
- Contract farming can be promoted for assured availability and access to raw materials for feed market.
- Price stability can be provided by establishing backward linkages especially with FPOs (Farmer Producer Organizations).
- Hedging in commodity exchanges through the derivatives route and delivery based forward contracts can be explored for price risk management.
- Hedging against investment risk means strategically using financial instruments or market strategies to offset the risk of any adverse price movements.
- Research is a priority to study the market and demand projection strategies can ensure higher yields per milch animal, promote animal health and nutrition, etc.
- Upgrading skills, setting up of adequate processing capacity and investment can attract foreign direct investment.

### 3.9 DAP Shortage Threatens to Hit Winter Crop Output

#### What is the issue?

India is staring at a severe shortage of diammonium phosphate (DAP) — a key fertiliser in the current rabi season, forcing the Centre to cut the allocation for many states.

#### What is DAP?

- DAP is a water-soluble ammonium phosphate salt which is produced by the reaction of ammonia with phosphoric acid under controlled conditions.
- DAP is the second most commonly used fertiliser in India after urea and farmers normally apply this fertiliser just before or at the beginning of sowing.
- It is a basic nutrient for Rabi crops like mustard and wheat.
- Fertilizer grade DAP contains 18% Nitrogen and 46% Phosphorus (P<sub>2</sub>O<sub>5</sub>).
- Though there are other phosphatic fertiliser such as Single Super Phosphate (SSP), DAP is the preferred source since it contains nitrogen as well.

#### What has led to the shortage?

- India is the top country by diammonium phosphate import in the world
- About 30% of DAP's annual demand of nearly 119 lakh tonne is met by domestic production in the country while the balance is imported.
- The current shortage is due to less import in the wake of a rise in the global prices of DAP.
- The landed cost of DAP was above 700 dollars a tonne now compared to 380 dollars last October.
- Six plants of fertilizers had been shut down as the then government figured it was cheaper to import than to produce DAP.
- China's move to ban fertiliser exports after its energy crisis has aggravated the situation.
- Huge black marketing of the fertilizer in the states of Punjab and Rajasthan were reported.

- An acute shortage of DAP has seen desperate farmers pelting stones at the police, blocking roads in protest, and even resorting to loot the fertilizer from a private dealer's outlet.

### How fertilizer prices are determined?

- In 2010, the government had launched the **nutrient-based subsidy (NBS)** programme.

- Under the scheme, a fixed amount of subsidy, decided on an annual basis, is provided on each grade of subsidised phosphatic and potassic (P&K) fertilisers, **except for urea**, based on the nutrient content present in them.

- Retail prices of non-urea fertilisers such as Di-ammonium Phosphate (DAP), Muriate of Potash (MoP) are decontrolled and are determined by manufacturers, while Centre gives a fixed subsidy each year.

### STATUS OF KEY RABI FERTILISERS

UREA (IN LAKH METRIC TONNES OR LMT)						
State	Total requirement till March 31, 2022	Requirement from October 1 to 19	Supply from October 1 to 19	Sale from October 1 to 19	Remaining requirement from Oct 1 to 19 to March 31, 2022	Stock availability as on October 19
Punjab	14.50	2.146	4.167	0.62	13.88	3.45
Haryana	11	1.226	2.344	0.56	10.44	1.76
DAP (IN LAKH METRIC TONNES OR LMT)						
Punjab	5.50	1.69	1.72	0.54	4.96	1.135
Haryana	3	0.67	1.07	0.77	2.23	0.29

- The government is making available fertilisers, namely urea and 21 grades of P&K fertilisers to farmers at subsidised prices through manufacturers/importers.
- In case of urea**, the government fixes the maximum retail price (MRP).
- The difference between the production cost and the MRP is reimbursed to manufacturers.

### What efforts have been taken by the government?

- The Centre has hiked the subsidies in May and October with the subsidy on DAP more than doubling this year.
- It increased the subsidy on DAP from the existing Rs 10,231 per tonne (Rs 511.55/bag) to Rs 24,231 per tonne (1,211.55/bag).
- The Department of Fertilisers too has notified a higher NBS rate for P (from Rs 14.888 to Rs 45.323/kg).
- ICAR has issued an advisory to prefer Single Super Phosphate (SSP) instead of DAP for mustard.
- The Haryana government has deputed administrative secretaries in six districts to keep a close watch on the supply chain of DAP fertilisers.

### What has to be done to resolve the fertiliser shortages?

- The immediate solution is in allowing manufacturers/importers to effect moderate price hikes while increasing the imports.
- There is a need for structural fixes such as shoring up the domestic capacities to reduce over-dependence on imports.
- The Centre must see if the deactivated earlier capacities for DAP and NPK can be revived, as has been done for urea.
- Inflation-linked price hikes by decontrolled fertiliser-makers must be allowed.
- Subsidy rates for locally produced phosphatics need to be fixed higher than for imports to incentivize the domestic production.

## 3.10 Sowing Better to Eat Better

### What is the issue?

The first round of Fifth National Family Health Survey suggested the worsening of nutrition-related indicators and Comprehensive National Nutrition Survey (2016-18) highlighted the role of micro-nutrient malnutrition.

### What is the status of India's agri-food systems?

- India produces sufficient food, feed and fibre to sustain about 18% of the world's population (as of 2020).
- Agriculture contributes about 16.5% to India's GDP and employs 42.3% of the workforce (2019-20).
- The problem of malnutrition is a huge challenge in India.

- COVID-19 has exacerbated the nutrition issue, while climate change has challenged the agricultural production itself.
- Economic and ecological sustainability, nutrition and the adoption of new agricultural technologies poses huge challenge.
- Disasters and extreme events make India's biosecurity more vulnerable.

#### How can the agri-food system be improved?

- A shift in production can diversify the dietary pattern and can ensure nutrition security.
- Nutritional security can be ensured by kitchen gardens, reducing post-harvest losses, nutrition-sensitive safety net programmes, women's empowerment, enforcement of standards, improving Water, Sanitation and Hygiene, nutrition education, and effective use of digital technology.
- The direction of agri-food systems has to be reoriented not only to enhance farm incomes but also to ensure better access to safe and nutritious foods.
- The cost on the environment and the climate posed by the agri-food systems has to be minimised.
- The theme of **World Food Day 2021: "Our actions are our future; Better production, better nutrition, a better environment and a better life"** has to be focussed.
- FAO's support for the transformation of agri-food systems such as mainstreaming agrobiodiversity, greening agriculture, promoting nutrition-sensitive agriculture and strengthening national food security is the need of the hour.
- Integrated crop-livestock-forestry-fishery systems can help farmers produce a variety of products.
- A sustainable agri-food system has to be promoted in which a variety of sufficient, nutritious and safe foods are made available at an affordable price to everyone.
- Such systems can deliver food security and nutrition for all without compromising the economic, social and environmental bases.



### 3.11 All about the Commodities Act

#### What is the issue?

The stock limit imposed on all pulses under the Essential Commodities Act, 1955 and the import by the government affects better rate for Tur dal in the Marathwada districts where the production is hit by at least 20%.

#### What is the status of pulse prices?

- The retail prices of pulses were substantially stabilized in the past five months from June 2021.
- The Consumer Price Index (CPI) inflation for pulses has also seen a consistent decline during the last five months from 10.01% in June to 5.42 % in October.
- The government cites that the import of Tur, Urad, and Moong dal is attributed to price stability but they incur heavy costs to farmers.
- When the government goes for imports, prices in the market collapse and the possibility of farmers getting a higher price for the produce gets affected.
- Since the farmers do not have storage capacity beyond a limit, they sell the produce at a price where even production cost is not recovered.

#### What are the Essential Commodities Act about?

*The Ministry of Consumer Affairs, Food and Public Distribution implements the Act.*

- **Essential Commodities Act, 1955** has given the Government the powers to regulate the production, supply and distribution of essential commodities.
- The Centre can notify an item as 'essential' commodity and by that declaration it can also impose a stock limit.



- **The Essential Commodities (Amendment) Act, 2020** removes restrictions on stocking of certain essential commodities.
- It provides that the central government can regulate the supply of food stuff only under extraordinary circumstances such as war, famine, exceptional price rise and grave natural calamities.
- It further specifies that stock limit can only be imposed if there is 50% rise in retail price of non-perishable agricultural foodstuff over the price prevailing in the preceding 12 months or average retail price of last 5 years, whichever is lower.
- It also provides that if a stock limit is imposed, it will not apply to a processor or value chain participant or an exporter.
- It gives the freedom to produce, hold, move, distribute and supply that will attract private sector or foreign direct investment into agriculture sector.

#### What were the concerns of the amendment?

- There were fears that this will give the traders freedom to purchase and store any quantity, hence indulging in hoarding.
- It was alleged that it will lead to complete market domination by big companies which would dictate terms to farmers.
- This law might affect the urban and rural poor consumers who get grains under Public Distribution System (PDS).

#### How to achieve better pricing for the produce?

- A stock facility is essential to avoid post-harvest waste and price crashes during the bumper crop.
- The government must invest or allow the private players to invest in order to boost the agriculture sector.



### 3.12 GMO Rice from India Withdrawn in EU

#### What is the issue?

- 500 tonnes of genetically modified rice were discovered by European Commission Rapid Alert System for Food and Feed (RASFF) in a consignment that India exported to the EU countries.
- In June, France had issued a notification for unauthorised GM rice flour identifying India as the point of origin.

#### What are GM crops?

- Genetically modified crops are plants of which the **DNA has been modified** using genetic engineering techniques.
- The aim is to introduce a new trait to the plant which does not occur naturally in the species.
- In food crops, it includes resistance to certain pests, diseases, or environmental conditions, and improving the nutrient profile of the crop.
- In non-food crops, it includes production of pharmaceutical agents, biofuels, and other industrially useful goods, as well as for bioremediation.
- More than 10% of world's crop lands have been planted with GM crops.

#### What are the benefits of GM crops?

- Better pest and disease resistance.
- Greater tolerance of stress, such as drought, low temperature or salinity.
- High yield and faster growth.
- More nutritious and tastier.
- May be possible to produce medicines or even vaccines.
- Can be made resistant to specific herbicides.

#### What are the drawbacks of GM crops?

- Can cause unpredictable side effects.



- Can raise health related concerns.
- Can cause ecological damage.
- Not accessible to every farmers.
- Problem with Intellectual property rights.

#### What is the status of GM varieties in India?

- GEAC is the apex body for approval of activities involving large scale use of hazardous microorganisms and recombinants. It is established under **Ministry of Environment, Forests and Climate Change**
- Genetic engineering appraisal committee (GEAC) is responsible for approval of proposals relating to release of genetically engineered organisms and products including experimental field trials.
- **Bt cotton** – Bt cotton was first used in India in 2002.
- It is an insect-resistant transgenic crop designed to combat the **bollworm** and it accounts for 90% of the cotton acreage now.
- It was created by genetically altering the cotton genome to express a microbial protein from the bacterium **Bacillus thuringiensis**.
- Three genes are inserted via genetic engineering techniques:
  1. Cry1Ac gene
  2. NPTII gene
  3. AAD gene
- **Bt-Brinjal** - The GEAC in 2007, recommended the commercial release of Bt Brinjal that is resistant to **brinjal shoot fly**.
- It was developed by Mahyco in collaboration with University of Agricultural Sciences (Dharwad), Tamil Nadu Agricultural University and ICAR-Indian Institute of Vegetable Research.
- But it was overturned in 2010 by the then Environment Minister who assumed the role of regulator and ordered a suspension on the transgenic vegetable's cultivation.
- **GM hybrid mustard (DMH-11)** – DMH -11 crop has been made resistant to broad spectrum herbicide – **Glufosinate**.
- It was developed by Delhi University.
- It is pending for commercial release as GEAC has advised to generate complete safety assessment data on environmental bio-safety, especially effects on beneficial insect species.
- Others – In India, there has been previous incidents of illegal cultivation of HTBt cotton, Bt brinjal and GM soybean in commercial scale.
- The **only** genetically modified crop under commercial cultivation in India is Bt cotton.

#### What is India's status regarding rice export?

- **India is the second largest producer of rice next to China, producing one fifth of the world's rice.**
- India is the **largest exporter** of rice.
- GM-free rice that is tagged as 'organic rice' is among India's high-value exports worth Rs. 63,000 crore annually.

Rank	APEDA Product	2020-2021			Major Importing Countries
		Qty in 000'MT	Value Rs.Crore	in% Share in value	
1	Non Basmati Rice	13095.1	35476.6	23.2	Benin , Nepal, Bangladesh
2	Basmati Rice	4630.5	29849.9	19.4	Saudi Arabia, Iran, Iraq

## What is India's statement on this issue?

- **There are apprehensions that the testing varieties of GM rice in trial plots may have leaked into the exported product.**
- The Indian government has denied this possibility alleging that the contamination may have happened in Europe to cut costs.
- India has indicated that it will commission an investigation involving its scientific bodies to enquire into this matter.
- Because of the close connections between farmers and State agriculture universities which are testing new varieties of crops, there is a possibility that seeds may transfer within plots.
- Because many Indian farmers are dependent on European imports, the Centre must ensure importers that India's produce is compliant with trade demands.
- India's first herbicide-tolerant & non-GM rice varieties - Pusa Basmati 1979 and Pusa Basmati 1985 was developed by Indian Agricultural Research Institute (IARI).
- It contains a mutated acetolactate synthase (ALS) gene that makes the plant resistant to Imazethapyr, a broad-spectrum herbicide.

## 4. ENVIRONMENT

### 4.1 Does India have a Right to Burn Fossil Fuels?

#### What is the issue?

With a lot of debate on India's dependence on coal, the Government of India has for the first time made a commitment to achieve the net zero target by 2070.

#### Why was India hesitant to commit to net zero target earlier?

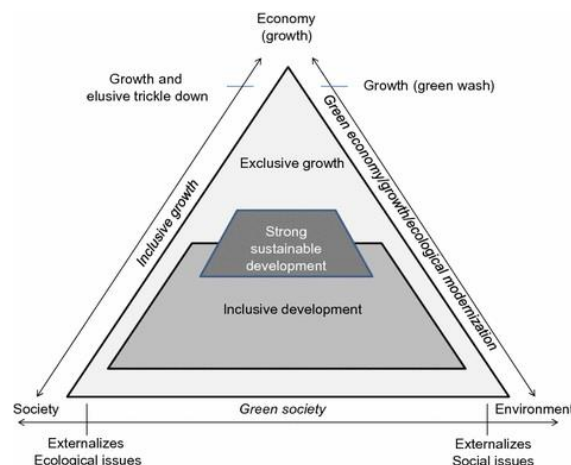
- India has neither historically emitted nor currently emits carbon anywhere close to what the global North has or does in per capita terms.
- India's per capita emissions is lower than the global average.
- It stressed for a higher and fairer share in the global carbon budget.
- There were arguments that since India was colonised, it has a right to burn and stopping the country from doing that is injustice.

#### What are the injustices in terms of a carbon budget?

- Global injustice in terms of a carbon budget happens at the level of the nation-states, between the rich and the poor within nations and between humans and non-human species.
- The Global South is not only made primarily responsible for climate change, but also has to bear the effect of climate change because of its tropical climate and high population density along the coastal lines.
- For development, the countries in the global South need not increase their share in the global carbon budget.

#### What major areas have to be focused for development?

- **Cleaner forms of energy** - The economic development requires energy and coal is favoured on account of its cost, reliability and domestic availability.
- But recent data show that the levelised cost of electricity from renewable energy sources like solar, hydro and onshore wind is already less than fossil fuel-based electricity generation.
- The frontier renewable energy technologies have managed to address the question of variability of sources with technological progress.
- Also, India is among the largest importers of coal in the world, whereas it has no scarcity of solar energy.



- **Development model** – The two significant issues under discussion in the post-colonial development were control over technology and choice of techniques to address the issue of surplus labour.
- The abundance of renewable natural resources in the tropical climate can give India a head start in this competitive world of technology.
- South-South collaborations can help India avoid the usual patterns of trade between the North and the South, where the former controls technology and the latter merely provides inputs.
- The high-employment path that the green energy provides may help address the issue of surplus labour while providing decentralised access to clean energy to the poor and the marginalized.
- It simultaneously addresses the issues of employment, technology, energy poverty and self-reliance.

### What is the path ahead?

- Global North needs to pay for the energy transition in the South.
- Creating an independent, greener path to development may give the South the moral high ground to force the North to come to the table, like South Africa did at Glasgow.
- The need of the hour is a global progressive agenda that wants working people of the world as a whole against the global ruling elite in its aggressive and dangerous model of competitive emissions.
- The transition to economic growth coupled with increased efficiency of renewable resources can aid India in achieving its goal of inclusive growth and sustainable development.

## 4.2 A Clean Energy Transition Plan for India

### What is the issue?

Provision of electricity security in India has a long way to go since its per capita electricity consumption is still only a third of the global average.

### What is the status of India's energy security?

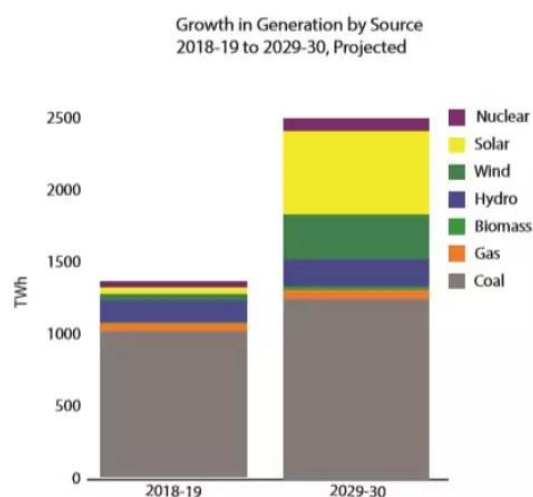
*Energy security refers to the uninterrupted supply of energy at affordable prices.*

- As of 31 July 2020, the total installed power capacity in India was 372 GW.
- The share of non-fossil fuels in installed capacity is 38%.
- India's energy consumption is forecast to grow at around 4.5 per cent annually to 2035.
- India faces the twin challenges of providing energy security to its population and mitigating climate change.

### What are the major sources of India's energy sector?

- **Thermal plants** – Coal is the key driver that fuels the thermal power plants in India.
- Coal plays a vital role to achieve SDG 7, which is “to ensure access to affordable, reliable, sustainable and modern energy for all”.
- The thermal power plants contributed 71% electricity generated by utilities in India during FY 2020-21.
- But they accounted for only 55% of the total installed generation capacity of 382 GW (as of March 2021).
- **Renewable energy** - Variable renewable energy sources (VRE) (primarily, wind and solar) account for 24.7% of the total installed generation capacity, as of March 2021.
- They contributed 10.7% of the electricity generated by utilities during FY 2020-21.
- The share of non-fossil fuels in installed capacity is 38% whereas India's INDC targets to achieve 40% by 2030.
- But the current level of VRE in the national power grid is increasing the cost of power procurement for DISCOMs, leading to tariff increases for electricity consumers.

**Figure 5: Historical (FY18-19) and projected generation by source**



Source: TERI, based on data from (CEA, 2019)

## What is the clean energy transition plan?

- **Retirement of specific installed generation capacity in TPPs** - Based on key performance parameters such as efficiency, coal consumption, technological obsolescence, age, progressive retirement of 36 GW of installed generation capacity in 211 TPPs has been outlined.
- **High-Efficiency-Low-Emission (HELE) TPPs**- The utilization of HELE TPPs can be increased to cope up with the shortfall in baseload electricity generation.
- **Nuclear power** - The Nuclear Power Corporation of India Limited's (NPCIL) construction of 11 nuclear power plants with a total generation capacity of 8,700 MW will supply 24x7 power without any CO2 emissions.

## What are the expected benefits out of this plan?

- The total installed capacity of TPPs operated by utilities will increase even after the retirement of obsolete TPPs.
- TPPs to be retired saves specific coal consumption and water requirement leading to reductions in electricity tariffs.
- The combined thermal and nuclear capacity of 235 GW can meet the baseload requirement (80% of peak demand) during the evening peak in FY 2029-30 without expensive battery storage.
- India's power generation from TPPs is expected to reduce from the level of 71% to 57% of the total electrical energy during FY 2029-30.
- Consequently, total CO2 emissions from the power sector will go down.
- HELE TPPs minimise the emissions of particulate matter (PM), SO2, and NO2.
- The installation of high-efficiency electrostatic precipitators can remove 99.97% of the PM pollution.
- This plan demonstrates India's commitment to climate change mitigation by optimising the use of our land, coal, water, and financial resources with indigenous technology.

## What clean energy commitments have been made by India?

- India made commitments to increase renewable energy installed capacity to 450 GW by 2030
- It aims to implement a National Hydrogen Energy Mission to scale up annual green hydrogen production to 1 MT by 2030.
- The government has announced to begin a Production Linked Incentive Scheme to add 10 GW solar PV manufacturing capacity by 2025.
- It has announced to create 15 MMT production capacity of compressed biogas by 2024,
- The government aims to achieve 20 per cent ethanol blending in petrol by 2025-26.
- It also promotes energy efficiency in agriculture, buildings, industry and transport to reduce the country's emissions intensity of GDP by 33-35 per cent over 2005 levels by 2030.

## 4.3 Glasgow Climate Pact: Achievements and Disappointments

### Why in news?

The Glasgow Climate Pact (of COP 26) was adopted recently and it is a mixed bag of modest achievements and disappointed expectations.

### What are the modest achievements of the Summit?

- **Average global temperature** - The achievements include a clear consensus on a target of keeping global temperature rise down to 1.5 degrees Celsius.
- The notional target of 2 degrees of the Paris Agreement remains but the international discourse is now set in the more ambitious target.
- **Transition from fossil fuels** - It is the first clear recognition of the need to transition away from fossil fuels by phasing down the use of coal.
- **Importance of Adaptation** – Adaptation attained greater significance and there is a commitment to double the current finance available for this to developing countries.
- A start is being made in formulating an adaptation plan and this puts the issue firmly on the Climate agenda.

- **Global Methane Pledge** - Methane is a significant greenhouse gas with 28 to 34 times higher temperature forcing quality than carbon but stays in the atmosphere for a shorter duration.
- An agreement is signed among 100 countries to cut methane emissions by 30 % by 2030.
- **Ending deforestation** - A group of 100 countries has agreed to begin to reverse deforestation by 2030.
- Since the group includes Brazil and Indonesia where large areas of forests are being ravaged by legal and illegal logging, there will be progress in expanding these carbon sinks on the planet.
- **US-China Joint Declaration on Climate Change** - It implies that both the countries are moving towards a less confrontational and more cooperative relationship overall.
- **India's commitments** – The commitment to achieve net-zero carbon by 2070 and of enhanced targets for renewable energy were welcomed.
- **Clarity on Article 6 of Paris agreement**- There is greater clarity on how bilateral carbon trades can proceed and the creation of a centralised hub that replaces [Kyoto Protocol's Clean Development Mechanism](#).
- Criteria have been set out for countries to use CERs from projects registered after January 1, 2013 to meet their first NDC or first adjusted NDC.
- It also designates a 12-member Supervisory Body to oversee the emerging hub and to review the baselines of recognised credits.
- Article 6 of the Paris Agreement introduces provisions for using international carbon markets to facilitate fulfilment of Nationally Determined Contributions (NDCs) by countries.

#### What are the major disappointments of the Summit?

- **Phasing out the coal** - India introduced an amendment to the original draft to replace the phrase “phase out” with “phase down” playing negatively with both the advanced as well as a large constituency of developing countries.
- India had earlier said that principles of equity meant all fossil sources: coal, oil and gas be reduced but the US and other countries refused as they were critical to their own economies.
- **Inadequate funding for adaptation** - Doubling the current finance available for adaptation to developing countries will be around \$ 30 billion which is grossly inadequate.
- According to UNEP, adaptation costs for developing countries are currently estimated at \$70 billion annually and will rise to an estimated \$130-300 billion annually by 2030.
- **Shortfall in Paris Agreement target** - The Paris Agreement target of \$100 billion per annum between 2005-2020 has a shortfall of more than half.
- The renewed commitment to deliver on this pledge in the 2020-2025 period is unlikely especially in this post-pandemic global economic slowdown.
- **Issue of compensation for loss and damage** – The compensation for loss and damage for developing countries who have suffered as a result of climate change for which they have not been responsible has not met.
- **Global Methane Pledge** - India did not join the Global Methane Pledge despite methane being the second-most abundant greenhouse gas in the atmosphere after carbon dioxide.
- **Ending deforestation** - India refused to join the group due to concerns over a clause on possible trade measures related to forest products.

#### How can the Glasgow outcome be assessed?

- There is more ambition in the intent to tackle climate change but little to show in terms of concrete actions as there are no compliance procedures.
- The UK Presidency noted that as on 2019, only 30% of the world was covered by net zero targets and this had now moved close to 90%.
- Enhanced Nationally Determined Contributions (NDCs) are expected to be announced next year and further deliberations are planned on the other pledges related to Adaptation and Finance.
- However the text of the agreement indicates that all countries should deliver climate plans to the UN on 5-year cycles starting from 2025 (submitting 2035 NDCs in 2025, 2040 NDCs in 2030).



## 4.4 Decarbonisation of Indian Economy

### What is the issue?

India's announcement of achieving net-zero emissions by 2070 has highlighted the importance of decarbonising the economy but the road ahead will be challenging.

### What is decarbonisation and what will be the impacts?

*Decarbonisation is the process of reducing the amount of carbon, mainly carbon dioxide (CO<sub>2</sub>), sent into the atmosphere.*

- Industrial decarbonization will propel India towards a sustainable future and further towards deep decarbonisation but it also causes loss to several players.
- People working in fossil fuels and energy production, heavy industry and the vehicle manufacturing sectors are expected to be significantly impacted in the coming decades.
- Steel, petrochemicals, aluminum, cement, and fertilizer sectors are hard to abate sectors and cleaner pathways are yet to prove themselves economically.
- Besides maintaining global competitiveness, heavy industries due to their longer lifespan they cannot retire their existing machinery and switch to green fuels due to associated costs very quickly.
- Another problem with heavy industries is the requirement of high temperature heat (>500 Degree Celsius), which can only be provided by burning fossil fuels.

**Figure 1: Industrial decarbonization challenges**



### What approach is needed for decarbonisation of economy?

- Breaking up into shorter periods** - By 2070, there will be many changes in technology, environmental conditions and the economy.
- The planning horizon of about 50 years will need to be broken up into shorter periods so that new knowledge about emerging technologies can be incorporated into plans.
- Five years, as the UK has used seems reasonable.
- Setting up an autonomous agency** – A technically credible agency like the Climate Change Committee (CCC) in the UK should be set up.
- Its members should be recognised experts in their fields to provide independent advice to the government regarding long-term and interim (five-year) targets.
- It would also monitor progress and annually report and suggest mid-course corrections.
- Targeting the power sector** - The power sector has to be focussed because it is the biggest source of GHG emissions and also the easiest one to decarbonise.
- It would be best to have a single emissions-related objective so that an optimal strategy can be developed at the lowest cost.
- Setting permissible emission intensity in terms of grams of carbon dioxide equivalent per kWh of electricity sold would be a good option for targets in the power sector.
- India is anticipating that 80-85% of the country's electricity demand will be met from renewable sources by 2050.

**Figure 2: Possible pathways for decarbonizing India's industrial sector**



- **Need for a Coordinated Approach** - There are separate targets for almost every resource such as solar, non-solar renewable energy, hydropower, etc.
- It reduces the flexibility of distribution companies to select resources to meet their loads resulting in a non-optimal resource mix and a higher cost of electricity.
- India needs a coordinated approach for decarbonisation of economy.

#### 4.5 Getting to the Root of Delhi's Air Pollution

##### What is the issue?

According to the System of Air Quality & Weather Forecasting & Research (SAFAR), Delhi's air quality continued to be in the 'very poor' category and curbs were imposed by the government.

##### What are the major causes for Delhi's air pollution?

According to the latest data from SAFAR, the levels of PM<sub>10</sub> and PM<sub>2.5</sub> particles have reached 876 and 680 micrograms per cubic metres, against the safe limits of 100 and 60 micrograms per cubic metres, respectively.

- A study commissioned by the Delhi government (2016) highlights that road dust along with construction and demolition dust is the most prominent polluter of air.
- Vehicles are the second largest polluter, with 20 % of PM 2.5 load and approximately 9 % of PM 10.
- The per capita registration of high emission vehicles in Delhi is reportedly the highest in India.
- Then there are over 100 coal thermal plants in the immediate 300-km periphery of Delhi and Industrial point sources have an annual contribution of about 11 % of PM 2.5 and 10 % of PM 10.
- Open burning of waste by neighbourhoods and municipalities, stubble burning, etc adds to this issue.
- Given the geographical nature of the region, Delhi ends up becoming a pollution trap with weather and wind speed playing a key role.
- Diwali crackers and stubble burning are the two most visible sources of pollution and every other sources of pollution are conveniently brushed under the carpet.



##### What is the relevance of blaming the neighbouring states?

- Stubble burning takes place for maximum three-four weeks in the month of October-November contributing to 2- 38 % of Delhi's ambient air quality.
- Goyal (2014) of Centre for Atmospheric Sciences, IIT Delhi reported that the largest contributor of air pollutant emissions in Delhi is found to be vehicles followed by industries, power plants and domestic sources.
- If stubble burning in these States is the only cause for Delhi's severe air pollution, then the air quality in Lucknow, Chandigarh and Amritsar should be high as well but this is not the case.
- The satellite images by ISRO prove that the neighbouring States were responsible for only 20% of the pollution, whereas the 80% was strictly from Delhi and mainly due to its garbage problem.

##### What is the way out for Delhi's pollution?

- Delhi's air pollution can be checked, provided the State has the will to do it and the residents should be also willing to change their lifestyle. +
- The Centre and the State need to rethink on the entire model of urban development that is being followed.

- Some long-term measures that can be suggested for cutting down the extreme pollution levels include
  - Imposing a ceiling on number of vehicles per household
  - Controlling diesel vehicles registration
  - Using of CNG engines for public transport
  - Phasing out old commercial vehicles
  - Restricting and regulating construction activities
  - Efficient management of garbage and
  - Banning of smoke generating fireworks in all social events
- Research initiatives need to be undertaken to ensure that the mechanised harvester does not leave the crop stubble behind.
- The government should provide right financial incentives and ensure that the collected straw can be used in biomass plants for power generation.

#### 4.6 Role of Bats in the Ecosystem

##### What is the issue?

Bats and humans have cohabited since time immemorial but the ecosystem services that bats provide are often neglected.

##### Why are bats so significant?

- The bats prey on insects in farms, fields, forests and grasslands including agricultural pests and disease-causing mosquitoes.
- A study in Thailand has shown that **pest biocontrol** provided by just one species of bat prevented the loss of 2,900 tons of rice per year saving 1.2 million dollars that would provide meals for 26,200 people annually.
- Some bats sip nectar and helps in the cross pollination of flowers.
- They eat fruits and spread the seeds of many important tree species including wild varieties of bananas, guava, cashew, mango, figs, mahua and other fruits.
- Bat droppings (guano) have high concentrations of nitrogen and phosphorous and are widely used as a fertilizer for agricultural crops.

##### What is the role of bats in spreading diseases?

- Bats are the largest mammalian groups after rodents and are among the longest lived mammals for their body size.
- Bats are known or suspected to be the natural reservoirs for many pathogenic viruses such as **Nipah, Hendra, Marburg, Ebola and the coronaviruses** that cause severe acute respiratory syndrome.
- Scientific evidences are pointing that the SARS-CoV2 virus that causes COVID-19 originated in bats.
- Despite being reservoirs for viruses, bats never fall sick.
- In gaining the ability to fly long distances, bats have inherited an **immune system that protects them from viruses**.
- It protects them from multiple chronic age-related diseases and makes them age slower, and live longer.

##### What about human-bat interface?

- Humans have significantly modified the landscape over the years by cutting the forests, clearing the land for agriculture and development resulting in disturbances to the habitat of bats.
- Activities such as mining destroy natural cave systems that bats live in.
- The spillovers are unusual and rare events and tend to occur when there is increased contact between humans and wild hosts.
- Scientists have shown that when bats are disturbed, they become stressed and could shed viruses that they carry, increasing the risk of spillover.



- Spillovers refer to the transmission of pathogens from their natural host or reservoirs to novel hosts such as humans.

#### How to restore the ecological balance?

- Co-existence** - Several indigenous people are dependent on animals and nature, and have achieved a balance without any harm to both sides.
- Some have isolation practices such as quarantine following hunting.
- The Bomrr clan in Nagaland have traditionally celebrated the annual bat harvest where they gather at a place called Mimi and smoke a cave full of bats to kill them for consumption.
- In the process, the bats bite them or scratch them yet there has been no major disease outbreak among the Bomrr clan.
- To understand why the Bomrr are immune to the viruses in the bats, the National Centre for Biological Sciences (NCBS-TIFR), an aided centre of Department of Atomic Energy is carrying out sero-ecological studies on this human-bat interface.
- Precautions** – Several precautions can be taken to minimise direct interactions with bats such as
  - Avoid handling or eating bats
  - Avoid eating fallen fruits gnawed by bats
  - Avoid fruits likely to be contaminated by bat fluids
- Restoring the balance** - Restricting and reversing land-use change practices can help in regaining the balance with nature and animals.
- Integrated approaches such as **One Health**, where human health is linked to that of the environment and animals can result in the best possible outcomes.
- Global commitment is required for the reduction of habitat loss, and for the preservation and restoration of natural habitats and biodiversity.

#### 4.7 Coal's Deadly Grip over Development is Coming to an End

##### What is the issue?

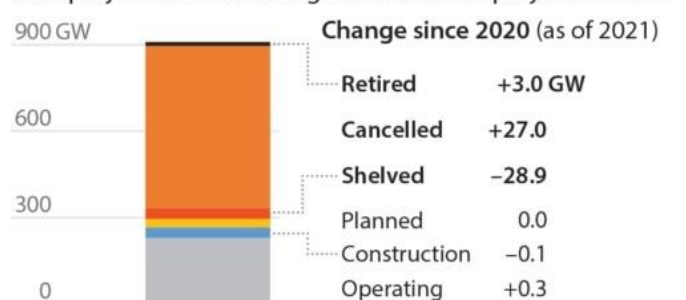
Much of India's 33 GW of coal-fired power capacity under construction and 29GW in the preconstruction stage will end up stranded, according to the Institute for Energy Economics and Financial Analysis (IEEFA).

##### What was the recent coal crisis about?

- The post-covid boom in economic demand, coupled with flooding in coal-producing regions, has led to major shortages of coal at power plants across the country.
- By October, some coal plants had dangerously low stocks of only two days.
- Given the global energy supply crunch, this situation could prevail in India for the next six months.
- To mitigate the pressure on coal supply, the government has ordered the temporary closure of some power plants and reduced electricity supply, particularly across rural India.
- These random power cuts that last 5-7 minutes will hurt the small-scale industrial outfits with basic operational setups (like power loom shacks).

##### India's Coal-Fired Power Project Pipeline

Coal project cancellations grow and future projects decline



Source: Global Energy Monitor

IEEFA

##### What attributes to the economically unviable nature of new coal fired plants?

- Competition of renewables**- India has set a target of 450GW of renewable energy capacity (including solar, wind, hydro and biomass) by 2030.
- Coal-fired power cannot compete with the ongoing cost reductions of renewables.
  - For instance, solar tariffs in India are now below the fuel costs of the running existing coal-fired power plants.
- Government regulation allows 100% FDI in renewable energy projects without prior government approval.

- A \$600-million incentive scheme for new solar power projects will boost the production of polysilicon, wafers, cells and modules over the next five years.
- NTPC has said that it will not be pursuing any new greenfield development of coal-fired power projects and has announced a target to install 32GW of renewable energy capacity by 2032.
- **Financial issues** -In the last 12 months no new coal-fired power plants have been announced, and there has been no movement in the 29GW of preconstruction capacity.
- This reflects the lack of financing available for new coal-fired power projects.
- IEEFA notes there is little confidence from investors to risk new capital in this sector which carries 40-60 billion dollars of non-performing or stranded assets.
- Nearly half (49%) of the 33GW of capacity now under construction in India is sponsored by state power generation companies such as NTPC and NLC India Ltd.
- The recruitment in Coal India, the state-run giant that accounts for nearly 80% of domestic coal output, has fallen below its retirement level.
- The International Energy Agency's (IEA) recent roadmap on reaching net zero emissions by 2050 recommends no new investment in fossil fuel supply projects, and no further final investment decisions for new unabated coal plants.

#### What measures have to be taken to ensure energy security?

- The government must introduce fiscal incentives like tax breaks and excise relaxations for research, development and production of renewable energy technology, particularly off-shore wind and hydro power.
- India should take advantage of the falling cost of renewables and rising viability of battery storage to meet power demand.
- Accelerating renewable energy capacity commissioning is critical to lower India's overall energy costs and support faster electrification of transportation and other industries.
- Ultra-low cost renewables would enable the development of a green hydrogen economy that can be utilised to strengthen India's long-term objective of energy security.

### 4.8 Haryana's Affidavit on Forest Land Case

#### Why in news?

The Haryana government recently filed an affidavit in the Supreme Court regarding its forest land.

#### What is the Haryana forest land case about?

- In 2002, 2018 (Kant Enclave judgment) and recently in July 2021, the Supreme Court has reiterated the following:
  1. All areas notified under Sections 3, 4 and 5 of the Punjab Land Preservation Act (PLP Act) are forest land including where the validity period of the notification has expired.
  2. Every structure constructed on such land after issuance of any notification under the provisions of the PLP Act are illegal structures and are required to be demolished.
- Recently, the court directed the Haryana government to ensure that all unauthorised structures standing on Aravali forest land are cleared "without any exception."
- Now, on the court's direction, the Haryana government has filed an affidavit clarifying about multiple notifications over the years declaring forest land in the state.
- It has also explained why all structures on the land covered under PLPA could not be removed.

#### Punjab's claims

- 39.35% of the total geographical area of the State has been notified under Sections 3, 4 and 5 of the Punjab Land Preservation (PLP) Act.
- This includes 100% area of at least 11 of the 22 districts of the state. [Panchkula, Ambala, Yamunanagar, Gurgaon, Faridabad, Palwal, Mewat, Mahendragarh, Rewari, Bhiwani and Charkhi Dadri.]
- All the areas covered under the PLP Act cannot be considered as a "forest land".



### What challenges does the Haryana government face?

- Haryana government has expressed its inability to follow the verdict, citing “unparalleled law and order problems.”
- Many of owners who were served notices claim that their premises in Faridabad’s Kheri village were outside the forest area.
- If the Court’s order is to be carried out, many critical establishments may have to be demolished including border force centres, universities, research institutions, thermal plant, corporate set ups, etc.
- Given these, the government has asked for further instructions from the court.

### What are the pending issues?

- In 2014, Haryana moved an application seeking clarification that land notified under expired notifications or orders passed under Section 4, 5 of PLPA should not be treated as forest.
- This plea is still pending consideration of the apex court.
- In February 2019, Haryana Vidhan Sabha passed an amendment to the PLPA.
- This excluded certain lands meant for construction from the ambit of PLPA notification.
- But, on March 1, 2019, Supreme Court forbade the Haryana government from taking any action in furtherance of the PLP (Amendment) Act, 2019.
- This matter is also pending.

## 4.9 Protecting India’s Natural Labs

### What is the issue?

India is long known as the world’s natural laboratory for geo-scientific learning but we are inching towards the disappearance of most of our geological heritage sites.

### What is the significance of India’s geodiversity?

- Indian landmass broke loose from the Gondwana land 150 million years ago and drifted northwards and got entwined with the world’s youngest plate boundary.
- The geological features evolved over billions of years through numerous cycles of tectonic and climate upheavals.
- The Kutch region in Gujarat has dinosaur fossils and Tiruchirappalli of Tamil Nadu is originally a Mesozoic Ocean acting as a store house of Cretaceous (60 million years ago) marine fossils.

### What is the status of recognition of geoheritage sites?

- The geological heritage of our planet was first recognised in 1991 at **First International Symposium on the Conservation of our Geological Heritage (Digne resolution)**.
- UNESCO facilitated efforts to create a formal programme to promote a global network of geoheritage sites complementing the World Heritage Convention and the UNESCO’s MAB.
- Countries like Vietnam and Thailand have implemented laws to conserve their geological and natural heritage.
- The **Global Geoparks Network** was founded in 2004 as an international partnership developed under the umbrella of UNESCO.
- Today, there are 169 Global Geoparks across 44 countries.

### What is the status of geoheritage sites in India?

- India is a signatory to the establishment of UNESCO Global Geoparks.
- But, it does not have any legislation and policy for conservation of geoheritages.
- Geological Survey of India (GSI) has identified 32 sites as **National Geological Monuments**.
- Yet **no** geopark in India is recognised by the UNESCO.

### What is the reason for disappearance of most of our geological heritage sites?

- **Lack of geological literacy** - Indian classrooms view disciplines like environmental science and geology inferior to other pure subjects like physics, biology, and chemistry.

- The lack of awareness in geo-heritage parks makes decision-making on climate change difficult.
- **Developmental activities** - The **Anjar site** in Kutch district which has high concentration of iridium providing evidence for a massive meteoritic impact that caused the extinction of dinosaurs about 65 million years ago was destroyed by laying of a new rail track.
- A national geological monument exhibiting a unique rock called **Nepheline Syenite** in Ajmer district of Rajasthan was destroyed in a road-widening project.
- The **Lonar impact crater** in Buldhana district of Maharashtra is under the threat of destruction.
- Unplanned and booming real estate business has destroyed many geoheritage sites.
- Unregulated stone mining activities have also contributed to this destruction.

#### What does this situation call for?

- The situation calls for immediate implementation of sustainable conservation measures such as those formulated for protecting biodiversity.
- A progressive legal framework is needed to conserve geoheritage sites.
- There is a need for a national conservation policy under the direct supervision of a national body committed to the protection of geo-heritage sites.

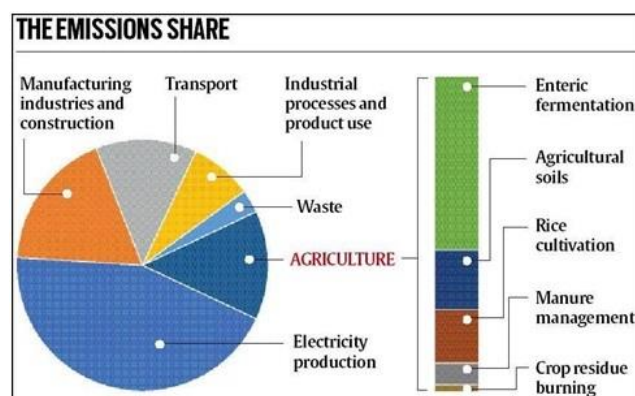
### 4.10 Carbon Policy for Agriculture

#### What is the issue?

Although the share of agriculture in India's total emissions has gradually declined, it has increased in absolute terms to a level similar to China's in absolute terms emissions.

#### What is India's status with respect to emissions?

- As per the **World Air Quality Report 2020**, 22 of the 30 most polluted cities in the world are in India and Delhi is the world's most polluted capital.
- According to the **Global Carbon Atlas**, India ranks third in total greenhouse gas emissions by emitting annually around 2.6 billion tonnes (Bt) CO<sub>2</sub>eq.
- India's per capita emission is just 1.8 tonnes, significantly lower than the world average of 4.4 tonnes per capita.
- India ranked seventh on the list of countries most affected due to extreme weather events, incurring losses of \$69 billion (in PPP) in 2019 (**Germanwatch, 2021**).
- In India, **energy sector** contributes highest emission (44 %), followed by manufacturing and construction sector (18 %), agriculture, forestry and land use sectors (14 %), with remaining being shared by transport, industrial processes and waste sectors.
- Share of agriculture in total emissions has gradually declined from 28% (1994) to 14% (2016).
- But in absolute terms, emissions from agriculture have increased to about 650 Mt CO<sub>2</sub> in 2018, which is similar to China's emissions from agriculture.
- Agricultural emissions in India are primarily from **livestock sector** (54.6 %), use of nitrogenous fertilisers (19 %), rice cultivation (17.5 %), livestock management (6.9 %) and burning of crop residues (2.1 %).



#### What is the need for a carbon policy for agriculture?

- A **carbon policy** for agriculture is needed not only to reduce its emissions but also to reward farmers through globally tradable carbon credits.
- With the world's largest livestock population (537 million), India needs better feeding practices with smaller numbers of cattle by raising their productivity.
- Direct seeded rice and alternative wet and dry practices can reduce the carbon footprint in rice fields
- Switching areas from rice to maize or other less water-guzzling crops can reduce the emissions from agriculture.

- Opening up corn for ethanol can help not only reduce our huge dependence on crude oil imports but also reduce the carbon footprint.
- Agricultural soils are the largest single source of N<sub>2</sub>O emissions in India where fertigation and soluble fertilisers can promote fertiliser use efficiency.

#### 4.11 Restoring India's fading Green Cover

##### What is the issue?

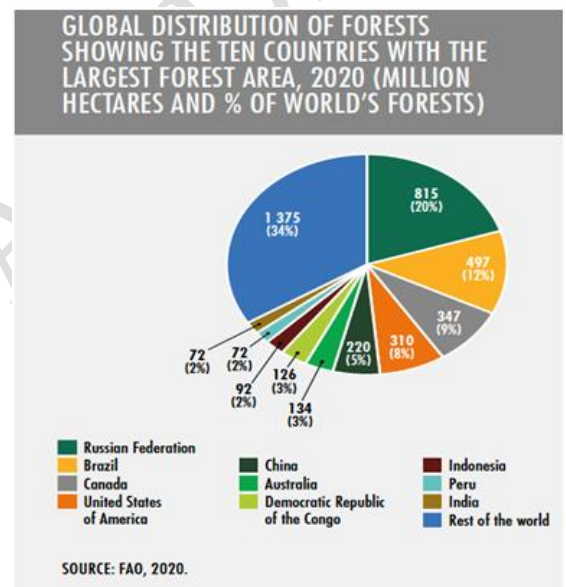
According to **State of the World's Forests report 2020** released by UNEP and FAO, since 1990, around 420 million hectares of forest have been lost through deforestation, conversion and land degradation.

##### What is the need for forest restoration?

- Restoration is bringing back the degraded or deforested landscape to its original state by various interventions to enable them to deliver all the benefits.
- It helps to improve ecological functions, productivity and create resilient forests with multifarious capabilities.
- India has 10 bio-geographical regions and 4 biodiversity hotspots sheltering 8% of the world's known flora and fauna but nearly 18% of the global human population depends on it.
- To combat this, India joined the Bonn Challenge with a pledge to restore 26 MHA of degraded and deforested land by 2030.

##### What are the key challenges in forest restoration?

- Planting without considering the local ecology and in wrongful places could be disastrous for local biodiversity.
- Nearly 5.03% of Indian forests are under protection area management needing specific restoration strategies after local research.
- Encroachment and grazing is linked to the livelihood of local communities as well as degradation of forests.
- There is an intricate link between poverty and environmental degradation as highlighted at the first UN global conference on human environment.
- Lack of adequate financing is one of the major concerns for the success of restoration.
- Conflict of interests among different stakeholders is even more challenging.



##### What can be done to restore India's fading green cover?

- Local research duly considering ecological aspects, local disturbances and forest-dependent communities is vital to formulate guidelines for locally suitable interventions.
- The participation of local communities with finances for incentives and rewards such as **Joint Forest Management Committees** (JFMC) is essential.
- Alternate ways of financing such as involving corporates in restoration activities with ongoing land-based programmes of various departments can help to make it easy for operation.
- An inclusive approach of active engagement of stakeholders including NGOs, awareness and capacity building of stakeholders is needed.

#### 4.12 Plastic Waste Management (Second Amendment) Rules, 2021

##### What is the issue?

The Union government notified the Plastic Waste Management (Second Amendment) Rules, 2021 allowing recycled plastic in food packaging.

##### What was the earlier case of recycled plastic?

- The 2016 rule mentions that carry bags or products made of recycled plastic shall not be used for storing, carrying, dispensing or packaging ready to eat or drink foodstuff.

- In 2018, the FSSAI banned the use of recycled plastic or newspaper for packaging of food items from July 1, 2019.

#### **What is the new amendment about?**

- The new rules provide a moratorium of 10 years to big companies to keep polluting since more single-use plastic products will be added to the phase-out list only after a decade.
- It has also allowed the use of recycled plastics for packing food products.

#### **What are the concerns of using recycled plastic?**

- India recycles 60 per cent of its plastic waste and most of this is done by the informal workforce in the country.
- Industrial packaging happens to be the highest user of plastic.
- The unscientific methods used by the informal workforce to produce plastic pellets raise concerns, especially around the contamination and purity of the recycled plastic.
- Plastic is used in a variety of sectors ranging from medicines, electronic equipment to chemical fertilizers and using such plastics in food contact applications is a concern.
- No standards were prescribed for recycling of plastic making it difficult to understand the chemical conformity of the recycled plastic.
- A growing body of research proves there is migration of chemicals (additives) from plastics to the food.

#### **What are the global practices regarding the use of recycled plastics?**

- In the U.S., manufacturers are responsible for ensuring that the recycled product is of suitable purity.
- The European Union has come up with a 'plastic strategy' in 2018 to transform the way plastic products are designed, produced, used and recycled in the EU.
- Korea's Ministry of Food and Drug Safety revised its legislation allowing only chemically recycled resins in parts that do not come into direct contact with food.
- The Chinese agency is now conducting an industry survey and initiating a risk assessment method for recycled food contact materials.

#### **What are the recommendations for India?**

- Our plastic has to be recycled in authorised recycling facilities.
- The use of recycled plastic should have been mandated for non-food applications initially to understand the issues.
- An inventory of the types of processes for recycling is needed and the safe method has to be identified and used for food contact applications.
- Guidelines on the source of the post-consumer plastic waste, type of polymer that can be used, the average time of plastic-food contact, temperature of the food, etc. are required.
- A working mechanism needs to be developed with all the stakeholders including MoEFCC, FSSAI, CPCB, SPCB, Urban Local Bodies, representatives of the plastic industry as well as consumers.

### **4.13 All about Green Hydrogen**

#### **What is the issue?**

As the green energy movement grows, Indian companies are on a mission to adopt green hydrogen, the cleanest form of energy in the world.

#### **What is green hydrogen?**

- Green hydrogen is produced with the help of electrolysis through electricity generated from renewable sources of energy such as solar and wind.
- An electric current then splits the water into hydrogen and oxygen.
- This ensures no greenhouse gas emissions as the only by product of this process is oxygen, making it a great replacement for carbon emitting fuels.

#### **What is green energy so significant?**



- India's current grey hydrogen production is six million tonnes per annum, which is around 8.5% of global annual production.
- As of now, 75% of India's energy demand is met by coal and oil, including imports which is expected to increase.
- The green hydrogen, being a sunrise sector, must be tapped to tackle the dependence on fossil fuel and take greater advantage of India's solar capacity.
- Green hydrogen is a crucial weapon in India's arsenal to fight climate change as it improves the long-term energy storage capabilities of renewable energy.
- It is also the most promising solution to decarbonise sectors like cement, steel, and refineries.
- Hydrogen can provide the lowest-cost decarbonization solution for over a fifth of final energy demand by mid-century contributing a cumulated reduction of 80Gt of CO<sub>2</sub> and is thus an essential solution to reach the 1.5°C climate scenario.
- Since hydrogen is the cleanest fuel, it can help India in achieving the target of net-zero carbon emissions by 2070.

### What steps have been taken to boost green hydrogen in India?

- Ministry of New and Renewable Energy (MNRE) has been supporting a broad based R&D programme on Hydrogen Energy and Fuel.
- With respect to transportation, major work has been supported to Banaras Hindu University, IIT Delhi, and Mahindra & Mahindra resulting in the development of internal combustion engines and vehicles that run on hydrogen fuel.
- Two hydrogen refuelling stations have been established (one each at Indian Oil R&D Centre, Faridabad and National Institute of Solar Energy, Gurugram).
- India has already taken the first step with the Indian Oil Corporation floating a global tender to set up two green hydrogen generations units at the Mathura and Panipat refineries.
- **National Hydrogen Energy Mission** which was proposed in the Budget Speech 2021-22 aims to develop India into a global hub for manufacturing of hydrogen and fuel cells technologies across the value chain.
- A production linked incentive (PLI) scheme was announced in the budget 2021-22.
- National Hydrogen Energy Mission document was drafted by MNRE to scale up Green Hydrogen production and utilization across multiple sectors, including transportation

### What are the challenges?

- The major challenge in the electrolysis of water using renewable energy is the cost, particularly, the cost of the electrolyser (the device that splits water).
- Only a handful of Indian companies manufacture electrolyzers.
- According to The Energy and Resources Institute (TERI), the cost of green hydrogen production is \$5-\$6 per kg.
- Another challenge is the efficiency of the electrolyzers i.e. how much electricity it consumes to produce a kg of hydrogen. Today, it is 55 kWhr per kg of hydrogen.
- Absence of dedicated government policy and lack of public awareness have been significant barriers in India's hydrogen economy.

### How can the green hydrogen production be ramped up?

- Green hydrogen prices to come down to at least \$2 per kg but this reduction in prices requires manufacturing electrolyzers on a much larger scale in India.
- Government funding and long-term policies that attract private investments within the standards and a progressive compliance framework are essential to boost green hydrogen.
- A few key sectors with low transition costs, such as refineries, fertilizers and natural gas, should be mandated to use hydrogen (green purchase obligation or GPO) to bring down costs as part of near-term goals.
- Shipping, aviation, energy storage and solutions towards power intermittency should be mandated to use green hydrogen in the long run.
- With its abundant and cheap solar energy, India has the upper hand to tap into these investments and lead global efforts in transitioning to green hydrogen.



## 5. DISASTER MANAGEMENT

### 5.1 Chennai Floods: TN's Long-term Solutions to avoid Monsoon Woes

#### What is the issue?

Tamil Nadu is reeling under the fury of the northeast monsoon with heavy floods forcing a near shutdown in Chennai and fears over the floods of the scale it experienced in 2015.

#### What is the similarity between the events leading to the 2015 floods and the current northeast monsoon?

- Filling up of reservoirs.
- Clogging up of drains preventing the percolation of rainwater.
- A low depression across the Bay of Bengal.
- Heavy rainfall - The city received 399 millimetres rainfall in five days in 2015 while this year it recorded 200 mm in one night.

#### What reasons were attributed for the present situation?

- An extreme weather event has been pointed out as the major cause for Chennai flood.
- Tamil Nadu's coastal districts get 60% of the annual rainfall and the interior districts get about 40-50% of the annual rainfall from the North East monsoon.
- **Inadequate and unscientific construction of stormwater drains** - For instance, a SWD project came under criticism as it was constructed on the seaward side of the East Coast Road, where the easy natural percolation of water prevents the need for artificial systems.
- **Encroachment of water bodies** - Pallikaranai wetland is where residential colonies, institutional areas and even a large garbage dump have been built.
- Over 300 lakes, tanks and canals have disappeared in the past decades and, according to the administration, over 1.5 lakh illegal constructions choke the cityscape.
- **Poor reservoir management** - Absence of desilting of reservoirs, poor water management, etc. added to the cause
- **Unplanned growth of the city** - For instance, the shopping hub of T Nagar was built on a lake bed and the city airport came up on the floodplains of Adyar.
- A mass rapid transport system has severely restricted the flow in Buckingham Canal, which was designed also as a protective barrier against floods and sea ingress.

#### What efforts have been taken?

- **Preparedness** - IMD has issued recurrent alerts and its early forecast warning has significantly reduced the losses unlike 2015 floods when over 400 people died.
- The corporation seems to have revised the 2017 City Disaster Management Plan and posted an improved version as the City Disaster Management Perspective Plan (CDMPP) 2021.
- **Efforts of Greater Chennai Corporation (GCC)**- GCC has been more proactive than the responses during the 2015 floods.
- Contact details have been posted in GCC website to allow access to information and responses rather than solely depending on Rippon building (GCC office).
- A flood grievance redress mechanism has been established by GCC
- **Leadership** - Both the chief minister and GCC Commissioner have been taking stock of the situation from ground-zero as well as reaching out to vulnerable communities in distress.
- **Relief** - Over a hundred relief centres in 15 risk zones for sheltering affected people as well as rendering immediate rescue and relief services are provided.
- All schools under GCC are being opened for accommodating flood-affected people.
- Rescue boats are kept on standby at all risk zones and NDRF teams have been deployed for the rescue operations.

- Food and medical supplies are being arranged and several community kitchens have been made operational.

#### **What has to be done to reduce the losses from such events in the future?**

- Chennai will have to reclaim at least a part of its lost water spaces and preserve whatever is left in order to better withstand the extremities of climate-change-induced weather events.
- The State Government should look for durable solutions to the city's long-standing woes and executing them in a short span of time.
- The people should be responsible enough in ensuring that the waterbodies and drains are not turned into dumps.
- The case of Chennai should be a reminder and evidence of the statement made in the Sixth Assessment Report by the IPCC that “**unpredictability of climate moods is the only predictable truth**”.

### **5.2 The Problem with Monsoon**

#### **What is the issue?**

The recent flash floods and landslides in Kerala is a matter of concern as variations in the monsoon pattern and intensity are increasingly witnessed.

#### **What is the recent happening in Kerala?**

- The torrential rain in Kerala has killed at least 35 people so far and red alert has been declared for 10 dams including Idukki.
- It has caused alarm as the Northeast monsoon lies ahead.
- The IMD has issued an alert for more heavy rainfall in Kerala from October 20.
- The Health Department has sounded an alert against the outbreak of infectious diseases due to heavy rains.
- The inundation of towns in 2018 and mudslides in 2019 had catastrophic effect in the State.

#### **What is causing frequent floods in Kerala?**

- **Relief** - Kerala hosts a vast stretch of Western Ghats with almost no break between severe spells of rainfall.
- **Cloudburst phenomenon** - Mini cloud bursts are marked by intense short spells, which may not exceed 10cm in one hour.
- For example, Mini cloudburst caused 2019 floods in Kerala.
- **Human intervention** - Illegal quarrying and mining activity has resulted in stones and rubble silting the streams and rivers thus increasing the magnitude of the damage.
- Timber felling, improper tree cutting has also had an adverse impact.
- **Premature silting up of reservoirs** - Premature silting up of reservoirs especially in the steep valleys in the Western Ghats is a major concern.
- **Unplanned constructions** - The construction of Athirappilly dam on the Chalakudy river in Kerala's Thrissur district has been strongly opposed.
- **Unscientific and improper water management** - poor management of reservoirs as happened in 2018 floods aggravates the situation
- **Inefficient legal framework** - The Kerala Conservation of Paddy Land and Wetland Act, 2008 has not been able to prevent construction of houses and other buildings in paddy fields and riverbeds

#### **What efforts have been taken to minimise the losses?**

- The Kerala government has upgraded its Orange Book for Disaster Management, which includes the standard operating procedures (SOP) and protocols for disaster management in the state.
- **Disaster management at taluk-level** - As part of an Incident Response System, individual officers at district and taluk level have been assigned to handle any emergencies.
- 33 hazard prone zone maps have been given to local bodies for increased preparedness.
- **Multiple weather inputs** - The state is taking inputs from IMD, Skymet, IBM, etc. for situational awareness.
- **Resilient Kerala Program** - The Government of India, the Government of Kerala and World Bank has signed a loan agreement of USD 250 million to boost disaster preparedness.

## What measures have to be taken for increased preparedness?

According to an estimate by researchers in 2017, quarrying area in Kerala accounts for over 7,157 hectares, much of it in central districts that were hit later by mudslides.

- Nurturing the health of rivers by proper silting
- Keeping the rivers free of encroachments
- Ending mining and deforestation in unstable areas
- Avoiding incompatible constructions
- Accurately mapping the hazard zones
- A more benign development policy treating nature as an asset
- Implementation of **Madhav Gadgil committee** report on Western Ghats
- Gadgil report (2011) recommended designating the entire hilly region of Western Ghats as an Ecologically Sensitive Area.
- The Kasturirangan panel that was constituted to examine the Gadgil report recommended reducing the area to be protected ecologically in Western Ghats to only 37 per cent.
- Following best practices – For instance, **Hakku initiative** in Hyderabad involves a team of six people to identify and visit risk-prone areas and pushes them towards solutions.

## 5.3 Disaster Resilience - An Inherent part of Community Culture

### What is the issue?

With the expansion of Panchayati Raj systems and Gram sabhas becoming more vibrant, it is imperative to make disaster resilience an inherent part of community culture.

### What is the role of PRIs?

*The Panchayati Raj was first adopted by Nagaur in Rajasthan on October 2, 1959.*

- In the system of local self-governance people in the villages participate in the decision-making process.
- It aids in the decentralisation of power.
- PRIs are considered as the backbone of democracy.
- It gives political education to the people and creates a new consciousness among them.
- **The People's Plan Campaign** aims to ensure the preparation of Gram Panchayat Development Plans for economic development and social justice.

### How PRIs performed in the recent Covid times?

- PRIs through their **bottom up approach** helped reduce Covid 19 risks, responded swiftly and thus helped people recover quickly.
- It provided essential leadership at the local level.
- They performed both regulatory and welfare functions.
  - During nationwide lockdown, PRIs set up containment zones, arranged transport and provisioned food for incoming migrants.
- Effective implementation of welfare schemes like MGNREGA and NRLM quickened the pace of recovery while ensuring support to the vulnerable population.
- Gram sabhas provide a platform to build consensus and make resolutions in the community's interest such as adherence to Covid norms.
- They organised **community-based surveillance systems** involving village elders, youth and SHGs to keep a strict vigil in quarantine centres and monitor symptoms in households.
- The role of PRIs in mobilising citizens for COVID-19 vaccination is commendable.

### How to strengthen the PRIs for effective disaster management?

- The Yokohama strategy emphasises on disaster prevention, mitigation and preparedness rather than disaster response alone to reduce vulnerability.

- It is crucial to include disaster management chapters in Panchayat Raj Acts to ensure citizen-centric mapping and planning of resources.
- Regular location-specific training programmes for the community can be conducted.
- Platforms can be organised for sharing best practices that will strengthen individual and institutional capacities.
- Since community is usually the first responder in case of a disaster, **community-based disaster management plans** can be formulated where traditional wisdom of local communities can complement modern practices.
- Financial contributions from the community should be encouraged through the establishment of **community disaster funds** in all gram panchayats.

#### 5.4 Growth and Sustainability - Kerala, Uttarakhand Disasters

##### What is the issue?

The floods and disaster in Kerala and Uttarakhand highlight a common cause that is to do with the development models adopted.

##### What caused the recent disasters?

- Climate change is, undoubtedly, at the root of the rain-wreaked havoc that Kerala and Uttarakhand are seeing.
- Anthropogenic climate change is a key reason for such extreme weather events.
- However, the devastation in Kerala and Uttarakhand cannot wholly be attributed to climate change alone.
- The development models adopted in the states have certainly exacerbated the risks from climate change.

##### What is the case with Kerala?

##### Madhav Gadgil report (2011) - Western Ghats Ecology Expert Panel (WGEEP) - Key Recommendations

- The Gadgil Committee divided the Western Ghats into 3 ecologically sensitive zones (ESZ).
- These are the highest (ESZ1), high (ESZ2) and moderate sensitivity (ESZ3) zones. This is in addition to the Protected Areas managed under acts such as the Wildlife Protection Act.
- It suggested that ESZ1 and ESZ2 would be largely 'no-gone' zones.
- So mining, polluting industries as well as large-scale development activities, including new railway lines are restricted in these.
- It also objected to new dams, thermal power stations or massive windmill farms or new townships in ESZ1.
- The panel however recommended giving larger say for local communities and gram sabhas on matters relating to the ecology of these regions.
- It also called for -
  1. stricter regulation on tourism
  2. phasing out of plastics and chemical fertilisers
  3. a ban on diversion of forest land into non-forest applications
  4. a ban on conversion of public lands into private lands

##### Kasturirangan committee

*Rejecting the Gadgil report, the government appointed a new committee under the chairmanship of K Kasturirangan to "examine" the WGEEP report.*

- The Kasturirangan committee did away with the graded approach in terms of ecological sensitivity.
- It instead divided the Western Ghats into 'cultural lands' (where there are currently human settlements) and 'natural lands'.
- It recommended declaring cultural lands into ecologically sensitive area (ESA). This spanned around 60,000 sq-km or 37% of the total area.
- It had proposed an area of 13,000 sq km as ESA. But under pressure from the Kerala government, the notified area was brought down to less than 10,000 sq km.

## Implications

- Nearly 40% of the granite quarries in Kerala in 2014-15 were located in ecologically sensitive areas.
- Significantly, a quarter of them were in the Gadgil committee-earmarked extremely sensitive ESZ1.
- The present disaster could not have been completely avoided, but the severity could have significantly been reduced, if not for the rejection of WGEEP's proposed zoning.

## What is the case with Uttarakhand?

- Development and other economic activity in the region without much thought given to vulnerabilities of ecology and topography.
- Increase in hydel power projects, encroachment of streams, glaciers, etc, for construction, roads, etc.
- The Lakhwar Multipurpose dam that had been shelved in 1992 recently received a key approval from the Centre, despite objections from experts.
- The Center has also made it easier for work to proceed in seven hydel power projects in Uttarakhand, notwithstanding criticism from experts.
- The development imperative vis-a-vis population pressures cannot be wished away, but certainly can be balanced against needs of ecology and geography.

## 6. INTERNAL SECURITY

### 6.1 Misuse of UAPA

#### What is the issue?

The Supreme Court's judgment in *Thwaha Fasal vs Union of India*, has deconstructed the provisions of the UAPA against blatant misuse.

#### What is the UAPA about?

- The Unlawful Activities (Prevention) Act (**UAPA**) was enacted in 1967 and was strengthened by the Union government in 2008 and 2012.
- The UAPA is meant to deal with matters of profound impact on the '**Defence of India**' and address threats to the very existence of our Nation.
- The Act introduces a vague definition of terrorism to encompass a wide range of non-violent political activity including political protest.
- The Act empowers the government to declare an organisation or an individual as "terrorist" and ban it.
- Even being a member of such a proscribed organisation becomes a criminal offence.
- It deprives the accused of the **right to bail** and this made them to live long under detention.
- Unlike the Criminal Procedure Code, the UAPA under Section 43D(2), permits keeping a person in prison for up to **180 days**, without even filing a charge sheet.

#### What is the background of this case?

- A charge sheet filed against Thwaha Fasal and Alan Shuhaib of Kerala for harbouring and associating with a banned Maoist outfit.
- The third accused absconded and later the investigation was handed over to the National Investigation Agency (NIA)
- The provisions of the UAPA were invoked and offences under Sections 38 and 39 of the UAPA and 120B of the Indian Penal Code (IPC) were alleged.
- **Section 38** deals with "offence relating to membership of a terrorist organization."
- **Section 39** deals with "offence relating to support given to a terrorist organisation."
- **Section 120B** of the IPC is the penal provision on criminal conspiracy.
- **Section 13** of the UAPA is the provision about punishment for unlawful activities.



**Section 43D(5)** of the UAPA says that for many of the offences under the Act, bail should not be granted, if there are reasonable grounds for believing that the accusation is *prima facie* true.

#### What is the judicial trajectory in this case?

- The trial judge granted bail to both the accused in September 2020 after initial rejections of the plea.
- The High Court, in appeal, confirmed the bail of Allen (the accused) but denied it to Thwaha.
- The Supreme Court upheld the trial judge's finding that the materials do not show any "intention on the part of both the accused to **further the activities** of the terrorist organisation".
- The top court confirmed the bail granted to both the students.
- The Court said that **mere association with a terrorist organisation is not sufficient** to attract the offences alleged.
- The Court ruled that mere possession of documents or books by the accused at a formative young age, or even their fascination for an ideology, does not make out an offence.
- It held that until the association and the support were with intention of furthering the activities of a terrorist organisation, offence under Section 38 or Section 39 is not made out

#### Why is the judgement so significant?

- **Presumption of guilt** - Instead of presumption of innocence, the UAPA holds presumption of guilt of the accused.
- According to **Section 43D(5)**, jail is the rule and bail is often not even an exception.
- Many individuals including Sudha Bharadwaj, Siddique Kappan and Stan Swamy were denied bail based on a narrow interpretation of the bail provision.
- The Court in this case has refused to construct this Section in a narrow and restrictive sense.
- It has tried to mitigate the error committed in *NIA vs Zahoor Ahmad Shah Watali* (2019) which ruled that the burden is on the accused to show that the prosecution case is not *prima facie* true.
- The Court also relied on the *Union of India vs K.A. Najeeb* (2021) which noted that the provisions under Section 43D(5) do not curtail the power of the court to grant bail on the ground of violation of fundamental rights.
- In 2021, the Delhi High Court granted bail to student activists Natasha Narwal, Devangana Kalita and Asif Iqbal Tanha who were charged under the UAPA for alleged connections with the Delhi riots.
- This judicial radicalism can release other political prisoners in the country who have been denied bail either due to the harshness of the law or due to the lack of understanding the law.

## 6.2 Pegasus Case

#### What is the issue?

Supreme Court has set up a panel to investigate allegations of potential surveillance of mobile phones using the Pegasus spyware.

#### What is Pegasus?

*A spyware is any malicious software designed to enter your computer device, gather your data, and forward it to a third-party without your consent.*

- Pegasus is a spyware developed by an Israeli firm, NSO Group, to infiltrate smartphones — Android and iOS — and turn them into surveillance devices.
- It is used as a tool to track criminals and terrorists for targeted spying and not mass surveillance.
- NSO Group has affirmed that it sells the software only to governments.

#### How does it work?

- Pegasus exploits undiscovered vulnerabilities or bugs, which means a phone could be infected even if it has the latest security patch installed.
- In 2016 smartphones were infected using a technique called "**spear-fishing**": text messages or emails containing a malicious link were sent to the target and it depended on the target clicking the link.
- By 2019, Pegasus employed **zero-click installation** without requiring any interaction by the target"

- It could infiltrate a device with a missed call on WhatsApp and could even delete the record of this missed call, making it impossible for the user to know they had been targeted.
- Pegasus also exploits bugs in iMessage, giving it backdoor access to millions of iPhones.
- The spyware can also be installed over a wireless transceiver (radio transmitter and receiver) located near a target.

### What happened with Pegasus spyware?

- The Pegasus Project, an international investigative journalism effort, revealed that various governments used the software to spy on government officials, opposition politicians, journalists, activists and many others.
- It said the Indian government used it to spy on around 300 people between 2017 and 2019.
- A case was filed in the Supreme Court accusing the government for indiscriminate spying.

### What was the government's stand?

- The government refused to file a detailed response to the allegations made by the petitioners citing national security as a reason.
- The government also pled to set up its own probe which was rejected by the court.
- The court said that such a course of action would violate the settled judicial principle against bias, i.e., "justice must not only be done, but also be seen to be done".

### What was the court's view?

- The Supreme court has underlined three key imperatives
  1. The right to privacy of citizens
  2. Freedom of the press including the right of journalists to ensure protection of their sources
  3. Limits on the usage of national security as a shield by the government to block disclosure of facts related to citizen's rights.
- The court cited the **Ram Jethmalani v. Union of India 2011** to say that the Government should not take an adversarial position when the fundamental rights of citizens are at threat.
- The court said that the Union of India may decline to provide information citing security of the State or other specific immunity under a specific statute but they must prove and justify the same.
- It has set seven terms of reference for the committee such as who procured Pegasus and whether the petitioners in the case were indeed targeted by use of the software, etc.
- The court has also asked the committee to make recommendations on a legal and policy framework on cyber security to ensure the right to privacy of citizens is protected.



### TO MAKE RECOMMENDATIONS

**1** Regarding enactment or amendment of law and procedures on surveillance, and to secure improved right to privacy.

**2** Regarding enhancing and improving cyber security of nation and its assets.

**3** To ensure prevention of invasion of right to privacy, other than lawfully, by State and/or non-State entities using such spyware.

**4** Regarding establishment of a mechanism to flag suspicion of

illegal surveillance of devices.

**5** Regarding setting up a well-equipped independent premier agency to investigate cyber security vulnerabilities and cyberattacks, and assess cyberattack threats.

**6** Regarding any *ad hoc* arrangement for protection of citizen's rights until Parliament is able to fill the lacunae.

**7** On any ancillary matter the Committee may deem fit and proper.  
(From SC order, edited)

### What were the earlier views regarding privacy?

The right to privacy is protected as an intrinsic part of the right to life and personal liberty under **Article 21**

The expression "freedom of press" has not been issues in Article 19 but it is comprehended within **Article 19(1)(a)**

- The **2017 K.S. Puttaswamy judgment** clarified that any invasion of privacy could only be justified if it satisfied three tests:
  1. The restriction must be by law
  2. It must be necessary (only if other means are not available) and proportionate (only as much as needed)
  3. It must promote a legitimate state interest (e.g., national security)]

- In 2018, the **Srikrishna Committee** on data protection noted that post the K.S. Puttaswamy judgment, most of India's intelligence agencies are "potentially unconstitutional" because they are not constituted under a statute passed by Parliament.

### 6.3 Political storm over extension of BSF's jurisdiction

#### What is the issue?

The recent notification of Ministry of Home Affairs extending the jurisdiction of BSF along the international borders in three states has led to a fresh round of controversy involving the Centre and states.

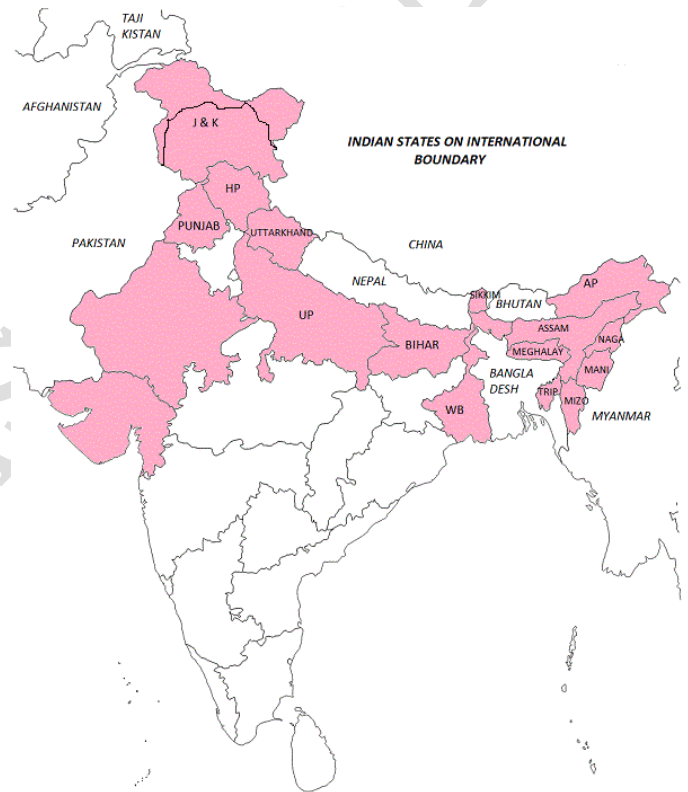
*As stated by Sir Ivor Jennings, "India has a federation with a strong centralising tendency".*

#### What is BSF?

- Border Security Force (BSF) is a specialized centrally controlled force to man the International Border with Pakistan.
- It is one of the five Central Armed Police Forces of the Union of India and is under the administrative control of **Ministry of Home Affairs**.
- Based on the recommendations of the Committee of Secretaries in the wake of the 1965 War, BSF came into existence on 01st Dec 1965.
- BSF has been termed as the First Line of Defence of Indian Territories.
- BSF is deployed at various integrated checkpoints of borders with Pakistan and Bangladesh and is handling the security issues in the famous Kartarpur Corridor.

#### What is the role of BSF?

- Peace time**
  - Promote a sense of security among the people living in the border areas.
  - Prevent trans-border crimes, unauthorized entry into or exit from the territory of India.
  - Prevent smuggling and any other illegal activity.
- War time**
  - Holding ground in less threatened sectors so long as the main attack does not develop in a particular sector
  - Protection of vital installations particularly air-fields against enemy commandos/Para troopers or raids.
  - Limited aggressive action against Para military or irregular forces of the enemy within the overall plan of the Armed forces.
  - Performing special tasks connected with intelligence including raids.
  - Acting as guides in an area of responsibility where routes are known.
  - Maintenance of law and order in enemy territory administered under the control of the Army.
  - Guarding of prisoners of war cages.
  - Assistance in control of refugees.
  - Anti- infiltration duties in specified area.



#### What is the jurisdiction of BSF?

- The last notification of Ministry of Home Affairs in 2014 defined the jurisdiction of the BSF.
- It stated that the BSF could operate in the entire states of Nagaland, Manipur, Mizoram, Tripura and Meghalaya without any restrictions.

- In Gujarat, it had jurisdiction up to a depth of 80 km and in Rajasthan up to 50 km.
- In Punjab, Assam and West Bengal, the BSF jurisdiction was up to a depth of 15 km.
- Under the latest notification issued on October 11, 2021, the jurisdiction has been reduced from 80 km to 50 km in Gujarat.
- Also, in Assam, West Bengal and Punjab, the BSF jurisdiction has been extended from **15 km to 50 km** which is seen as an assault on **federalism**.

### What is the need for revision of jurisdiction?

- **Punjab** - The threat perception from across the international borders has undergone a sea change in the context of recent developments in the Af-Pak region.
- Radical groups of different shades are attempting to destabilise Punjab where there have been several attempts to drop weapons from drones.
- The seizure of 3,000 kg of heroin that originated from Afghanistan and the killing of five army personnel in Surankote (Jammu and Kashmir) are the recent ones.
- There have been probabilities for Pakistan-sponsored terrorist groups, particularly the Lashkar-e-Toiba and Jaish-e-Muhammad to renew their onslaught in the border states.
- **West Bengal** - Illegal migrants have caused a democratic change in West Bengal.
- **Assam** - Assam faces multiple problems of ethnic insurgencies, smuggling, counterfeit currency, drug trafficking, etc.
- The effectiveness of State police force against the emerging trans-border threats is under suspicion.
- Hence, the Government of India decided to extend the jurisdiction of the BSF in three states.

### Does the notification hamper the role of State Governments?

*In Indian federation where police and public order are the responsibility of states, "the Union may devise emergency regimes in its Constitution through legislation to override the exclusive autonomy of the states in respect of law and order and policy".*

- Section 139 of the **BSF Act** empowers the members of the BSF to discharge certain powers and duties within local limits of the areas specified in the schedule.
- The jurisdiction of the state police has neither been curtailed nor its powers reduced in any manner.
- The BSF will also exercise powers of search, seizure and arrest against those entering India illegally in respect of the **Passport Act 1967**, **Passport (Entry into India) Act 1920** and specified sections of **Criminal Procedure Code**.
- The BSF would hand over the accused to the local police and the power to register FIR and investigate the case remains with the state police.

## 7. SCIENCE AND TECHNOLOGY

### 7.1 S-400 Triumph Defence System

#### Why in news?

Russia has started supplying S-400 air defence system to India and the first division will be delivered by the end of 2021.

#### What is the status of the deal?

- India has signed a deal in 2018 with Russia for five S-400 Triumph regiments from Russia under a 5.43 billion dollar deal.
- The delivery was to begin by the end of 2020 but was slightly delayed due to late payments as well as the COVID-19 pandemic and is likely to be completed by April 2023.
- Both sides worked out a **Rupee-Rouble exchange** for payments following which India paid 15% advance amount triggering the delivery cycle.
- The rupee-rouble arrangement means that the payment for S-400 will be done by India in Indian Rupees (INR) equivalent to the value of the weapon system in roubles, the currency of the Russian Federation.



## What is the S-400 system?

- Named **SA-21 Growler** by NATO and developed by Russia's Almaz Central Design Bureau, S-400 Triumf is one of the world's most advanced air defence systems.
- It is a **surface-to-air** missile system that can simultaneously track and neutralise a range of incoming objects spanning aircraft, missiles and Unmanned Aerial Vehicles (UAV) over very long ranges.
- It can provide air interception against early warning aircraft, airborne missile strategic carriers, tactical and theatre ballistic missiles, medium-range ballistic missiles, etc.
- The S-400 is fully mobile and each system has a 3D phased array acquisition radar that can track around 300 targets up to 600 km.
- It has a command and control centre, automatic tracking and targeting systems, launchers and support vehicles.
- The missile system is tackle any aerial target within a range of **400km** and can simultaneously engage 36 targets.
- Each system has four different types to missiles for up to 40 km, 120 km, 250 km and 400 km and up to **30 km altitude**.
- It can be activated within five minutes and has the flexibility to be integrated into the existing and future air defence units of the air force, army and navy.
- The S-400 also comes with improved electronic counter-countermeasures to tackle the attempts at jamming.
- Another capability of S-400 is its **"fire-and-forget capability"** which does not require further guidance after the launch and can hit the target without the launcher being in line-of-sight of the target.



**India inks S-400 Triumf deal with Russia**

India has signed a \$ 5.43 billion (about ₹ 40,000 crore) deal with Russia to procure five S-400 Triumf advanced air defence missile systems

**S-400 Triumf Features**

- Can engage all types of aerial targets including aircraft, unmanned aerial vehicles and all types of missiles
- Locates targets at 600 km and can destroy them at 400 km range, up to an altitude of 30 km
- The system can engage multiple targets simultaneously

**Integrates:**

- Multifunction radar
- Anti-aircraft missile systems
- Launchers
- Autonomous detection and targeting systems
- Command and control centre

**Range of missiles:**

Capable of firing different types of missiles to create a layered defence shield

- 40N6: 400 km
- 9M96E2: 120 km
- 48N6: 250 km
- 9M96E: 40 km

**Possible deployment options**

Map not to scale

KBK InfoGraphics

## Why is the S-400 important for India?

- The S-400 fills the gaps in India's national air defence network and would complement India's indigenous **Ballistic Missile Defence System** developed by the DRDO to create a multi-tier air defence over the country.
- The S-400 would be seamlessly integrated into the country's existing air defence network of Indian Air Force.
- If it is deployed towards the Western borders, the system can track movements of Pakistan Air Force aircraft as soon as they take off from their bases.
- The S-400 air defence systems and Rafale fighter jets are **"game-changers"** for the IAF and said they were like a booster dose to the force.
- Countries such as Algeria, Belarus, China, Turkey, etc. have already procured the S-400 defence system.

## Why is the US upset with it?

- The US's **Countering America's Adversaries through Sanctions Act (CAATSA)**, 2017 has provided for economic and travel sanctions against countries and officials that transacted significant military and intelligence contracts with Russia, North Korea and Iran.
- The sanctions which were slapped on China and Turkey for buying the S-400 could also be used against India.
- For India, acceding to such sanctions challenges the nation's principles of sovereignty and strategic autonomy.
- The U.S. has a choice to waive sanctions if the waiver is found to be in American vital national security interests or if India reduces its future dependence on Russian weaponry.
- India-Russia Defence trade** - The defence trade between India and Russia was \$15 billion in the last three years because of several big-ticket deals.

- A report by SIPRI on the trends in international arms transfer said that while arms imports by India decreased by 33% between 2011–15 and 2016–20, **Russia remained the largest supplier to India** in 2011-15 and in the next half decade from 2016 -20.
- Deals related to Ka-226T utility helicopters, AK-203 assault rifles and Igla-S Very Short Range Air Defence (VSHORAD) systems are in advanced stages of being concluded.
- **India- US Defence trade** – The USA is the fourth largest arms supplier to India in 2016–20.
- India is in the process of procuring additional P-8I maritime reconnaissance aircraft, AH-64E Apache attack helicopters with the US.
- Negotiations are in advanced stages for armed drones and Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) aircraft.
- India is a prized U.S. partner of the Quad, the Indo-Pacific and in countering China and hence sanctions will cause a rift in India-U.S. ties and could spur India towards Russia.
- The US must recognise that its unilateral sanctions which are not U.N. endorsed would undermine the multilateral system.
- New Delhi must make it clear to Washington that the law should be abandoned, as it nullifies the very “rules-based international order” which is the foundation of the India-U.S. global strategic partnership.

## 7.2 Synthetic Biology in Dairy Sector

### Why in news?

There has been increasing research on animal-free dairy by replicating milk proteins in genetically modified microbes by using genetic sequences from many mammals.

### What is the composition of milk?

- India is the world's largest dairy producer and has over 100 million dairy farmers.
- Milk is a superfood that plays critical role in our nutrition.
- On an average, 87% of cow's milk is water.
- Lactose, a simple sugar consisting of glucose and galactose sub-units, makes up 4.4%.
- Milk fats average to about 4.5% and minerals constitute less than 1%.
- Milk proteins make up 3.8% of which almost 80% is caseins and about 20% is whey proteins.
- Lactoferrin and a few other proteins are also present in minute quantities.
- When the milk turns sour due to acid-producing bacteria, or if one adds a little bit of lemon juice, it curdles and the caseins precipitate.

### What is synthetic biology?

- Synthetic biology is a field of science that involves redesigning organisms for useful purposes by engineering them to have new abilities.
- Redesigning organisms can produce substances, such as medicine or fuel, or gain a new ability, such as sensing something in the environment.
- Some examples of what scientists are producing with synthetic biology are:
  - Microorganisms harnessed for bioremediation to clean pollutants from our water, soil and air.
  - Rice modified to produce beta-carotene that prevents vitamin A deficiency.
  - Yeast engineered to produce rose oil as an eco-friendly and sustainable substitute for real roses
  - Production of animal free dairy products

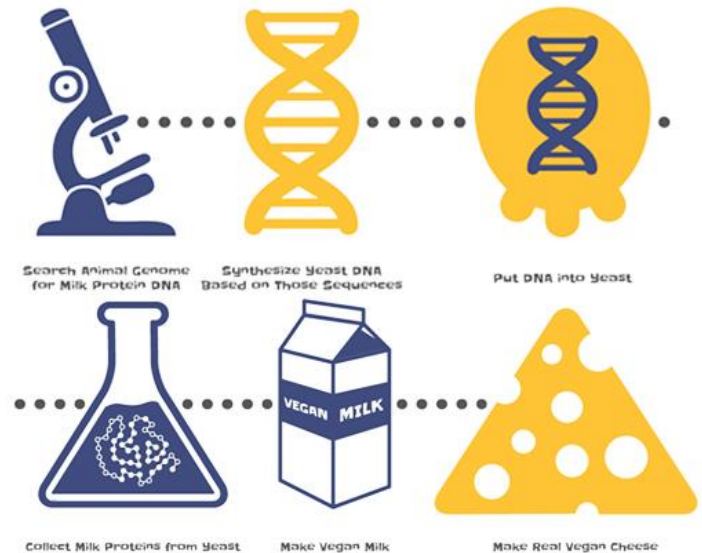
### What is the difference between synthetic biology and genome editing?

- In synthetic biology, scientists typically stitch together long stretches of DNA and insert them into an organism's genome.
- These synthesized pieces of DNA could be genes that are found in other organisms or they could be entirely novel.

- In genome editing, scientists typically use tools to make smaller changes to the organism's own DNA.
- Genome editing tools can also be used to delete or add small stretches of DNA in the genome.

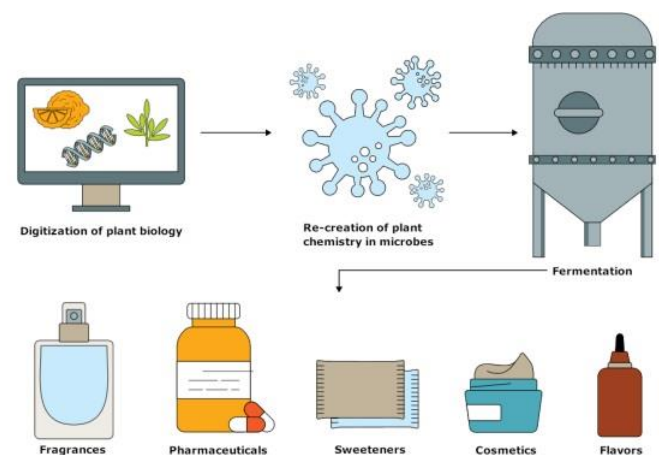
### What is the significance of studying mammalian lactation?

- It shows us how evolution has resulted in remarkably fine-tuned solutions to problems.
- **Study about antimicrobial protein** - For instance, the duck-billed platypus, a mammal that lays eggs has evolved a milk pad but not teats.
- As a result, its newborn sucklings are exposed to a large load and variety of microbes.
- An unusually potent antimicrobial protein, **MLP (Monotreme Lactation Protein)** found only in platypus milk serves to protect its babies from pathogens.
- **Promote business** - Studying the mammalian lactation can aid to build sustainable businesses in the vegan milk sector.
- Amongst the most ambitious approaches are the ones trying to grow cell cultures of the mammary organs themselves to secrete human and other mammalian milks.
- Several start-ups are attempting to make "animal-free" value-added dairy products and atleast one start-up is trying to re-constitute human breast milk with critical proteins made through synthetic biology.
- **Understanding the proteins** - It helps scientists understand how **lactoferrin**, a whey protein, modulates in multiple ways thus promoting a beneficial gut microbiome among infants.
- Recently whey proteins have been produced using synthetic biology techniques by relying on re-programming a type of fungus called Trichoderma.
- The **Vechur cow** (now almost extinct), a dwarf cow, native to the Kuttanad region of Kerala yields milk containing as much lactoferrin as human breast milk.



### What are the ethical and social implications of synthetic biology?

- Many of the ethical questions relevant to synthetic biology are similar to ethical discussions related to genome editing.
- Are humans crossing moral boundaries by redesigning organisms with synthetic biology techniques?
- If synthetic biology yields new treatments and cures for diseases, who in our society will have access to them?
- What are the environmental impacts of introducing modified organisms into the ecosystem?



### What supports an animal-free food supply chain?

- Factory farming of animals has led to widespread antibiotic resistance because best practices in such factories required the extensive use of antibiotics.
- Pandemics also have arisen on account of the high density of animals in the factory farms.
- The vast amounts of concentrated animal waste also require careful disposal of nitrogen compounds into the environment.
- The ethical alternatives offered by synthetic biology decrease animal suffering.



### 7.3 Suspicions about the Crypto Currencies

#### What is the issue?

Crypto Currencies run on belief and trust with no regulators and lots of people who tried to float their imaginary currencies have failed and it is quite timely for the government and regulators to take a close look.

#### What are crypto currencies?

- A cryptocurrency (or “crypto”) is a digital currency that can be used to buy goods and services but uses an online ledger with strong cryptography to secure online transactions.
- Cryptocurrencies work using a technology called **blockchain** which is a decentralized technology spread across many computers that manages and records transactions.
- Examples of cryptocurrencies include Litecoin, Ripple, Bitcoin, Ethereum, Dogecoin, Tether, Solana, etc.
- Cryptocurrencies does not come under the Securities Contracts (Regulation) Act, 1956 and hence SEBI is not involved in regulation.
- It does not involve financial institutions and hence RBI is out of the purview.
- It has not been declared illegal by the Courts and hence the government cannot do anything as of now.
- The cryptocurrencies are unique because it is prevalent across the world and more importantly it trades without there being any underlying value.

#### Which suspicious questions need to be answered by the regulators?

1. Whether crypto is being used as a mode of transaction?
  2. How these transactions take place?
  3. What about the investment option?
  4. What are the implications for the Rupee?
  5. How would this threaten the fiscal and monetary policy?
- **Mode of transaction** - Currently there is no information if people are paying in crypto currency.
  - We cannot have parallel currencies in the country and allowing crypto as a currency for transactions will undermine the monetary policy affecting the entire system of payments.
  - If there is a crash in value, the investors will lose money for which there is no recourse.
  - Bitcoin is rendered an inappropriate medium of exchange because the aggregate supply is inelastic and demand shocks result in outsized price volatility.
  - To get around this problem, **Stablecoins** have been introduced which provide much greater price stability and hope to serve as viable mediums of exchange.
  - Stablecoins are the currencies whose value is pegged to a fiat currency by maintaining equivalent reserves.
  - **Impact on currencies** - It is unclear whether the transactions are done in rupees and remain in this currency or get converted to dollars.
  - If cryptos begin to get mined onshore they will induce capital inflows and will increase capital account volatility which will directly impact the currency market.
  - If there are conversions into dollars then there would be Foreign Exchange Management Act (FEMA) rule to deal with.
  - The exchanges which promote trading in crypto have to be transparent in terms of doing a KYC because if there is conversion into dollars at any stage it needs to be within the guidelines put by the RBI.
  - **Investment option** - It is still not clear if the gains come under short or long term and the IT Department will have to decide on this issue.
  - **Gambling issues** - If one can trade in imaginary currencies it amounts to gambling which is partly permitted in the country.
  - If trading in cryptos fall in this category, it can be argued that people should be allowed to gamble on cricket matches too and there should be a level playing field.
  - **Threat for central banks** - Some states in the US accept bitcoins for transactions as do some of the Nordic countries.



- Central banks of some countries view that their power over monetary policy are getting denuded.
- **Fiscal policy** - fiscal revenues can be adversely impacted by the increased tax evasion opportunities that crypto-currencies can facilitate.

#### What approach is the need of the hour?

- There is need for a deep analysis into this entire issue of crypto currency as the level of interest is high and increasing.
- Allowing such investments also risks savings getting diverted for speculative purposes which is not good for an economy that has a big gap in savings and investments.
- IMF points out that if cryptos are only used for niche purposes (narrow cross-country transfers and remittances), which are then quickly converted back into local fiat currencies, the implications for monetary policy can be contained.
- People investing should know what they are up against because when there is a crash there can be an issue.
- The less financially literate need to be educated and maybe a bold print saying 'trading in crypto can be bad for your financial health' can be the beginning.

### 7.4 Taxing the Cryptocurrencies

#### Why in news?

The Centre is planning new changes in the income tax laws in a bid to bring cryptocurrencies under the tax radar.

#### What is the stand of India regarding crypto currencies?

- The RBI has repeatedly highlighted that it feels cryptocurrencies like BitCoin may pose a risk to financial stability and also questioned its claims of market value.
- The Supreme Court however nullified the RBI circular banning cryptocurrencies and it set aside an RBI circular that prohibited banks and entities regulated by it from providing services with connection to virtual currencies.
- The government feels that the RBI's objections are too stringent and centred around a ban as in China.
- The government had released '**The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021**' to create a facilitative framework for creation of the official digital currency to be issued by the RBI.
- The Bill appeared to be based on the recommendations of the SC Garg Committee formed by the Centre.
- It seeks to prohibit all private cryptocurrencies in India but it allows for certain exceptions to promote the underlying technology of cryptocurrency and its uses.
- Recently, government officials met representatives of crypto-exchanges, Block chain and Crypto Assets Council (BACC) and have arrived at a conclusion that cryptocurrencies should not be banned but should be regulated.
- There is a proposal to bring cryptocurrency under the ambit of tax amid reports that the government is about to introduce a bill on cryptocurrencies during the winter session of Parliament.

#### How can the cryptos be put under the ambit of taxation?

- One of the methods is to classify crypto-exchanges as "**e-commerce platforms**" so that the tax collection at source provisions would apply.
- Another thought is that those involved in cryptocurrency trading could be categorised as "**facilitator, brokerage**" and GST be collected on these services.
- The government could categorise services provided by overseas cryptocurrency exchanges that allow Indians to trade on their platforms as online information database access and retrieval (OIDAR) devices.

#### What is the Central Economic Intelligence Bureau (CEIB)'s proposal in this regard?

- The act of cryptocurrency mining could be treated as a supply of service and should be classified as an intangible asset and attract a GST of 18%
- Taxpayers operating as cryptocurrency miners will be required to register under GST if their annual revenue exceeds Rs.20 lakh.
- Trading of cryptocurrency and other related transactions like transfer, storage, accounting etc are also likely to be considered as an act of supply and could be taxed.

- In cases where the buyer and seller are registered as Indian residents and operators, the transaction should be treated as a supply of software.
- International cryptocurrency transactions by companies registered in India will be treated as import or export of goods and as such will be liable to IGST.
- Another major reason to consider bringing cryptocurrencies under the GST purview is to curb money laundering and undermining of legitimate currencies.

#### What are the issues in taxing the crypto currencies?

- **Nature of Cryptos** - Virtual coins are not considered an asset, security, or even currency in India.
- The cryptocurrency has to be treated as an asset, security or currency before GST can be charged on services offered by overseas cryptocurrency exchanges.
- **Taxation procedure** - It has to be first determined whether GST will be applicable on all transactions or only on the margins.
- As on date, most Indian cryptocurrency exchanges pay 18% GST on margins or the commission that they charge.
- **Payment in Cryptos** - It is obvious that the Balances in Electronic Cash and Credit Ledger cannot be stated in cryptos.
- Also, one cannot pay tax in cryptos as of now.
- **Grey areas in GST laws** - The definition of an intermediary and the tax on their services has been going back and forth for sometime.
- There is also a necessity to think of a new HSN/SAC Code for cryptos.
- Under GST, all goods and services transacted in India are classified under the HSN code system or SAC Code system. Based on the HSN or SAC code, GST rates have been fixed in five slabs, namely NIL, 5%, 12%, 18% and 28%.

#### What has to be done before taxing the cryptos?

- Government should ensure that it covers all aspects governing virtual currencies and not only their tax aspects in the forthcoming Crypto Bill.
- FAQs and Educational Material with regard to GST on cryptos and a detailed document on cryptos is needed to prevent aggressive assessment orders being passed.
- Some fintech company located in India may work on building a product that permits payments in GST to be made from normal banking channels using cryptos as a reference point.

### 7.5 How Digital Currencies Work

#### What is the issue?

Thousands of Indians are flocking to these digital assets and pumping in crores of rupees and there comes a need to know about cryptocurrencies before joining them.

#### What is a cryptocurrency?

*Satoshi Nakamoto is said to have conceptualised an accounting system in the aftermath of the 2008 financial crisis which has mooted the idea of blockchain.*

- A cryptocurrency is a medium of exchange, such as the rupee or the US dollar, but is digital in format and uses encryption techniques to both control the creation of monetary units and to verify the exchange of money.
- Bitcoin is the largest in the world according to market capitalisation, followed by Ethereum.
- With cryptocurrencies, a chain of private computers (a network) is constantly working towards authenticating the transactions by solving complex cryptographic puzzles.
- For solving the puzzles, these systems are rewarded with cryptocurrencies and this process is called mining.
- A blockchain wallet is used to store the cryptocurrencies which facilitate smooth exchanges and secure transactions as they are cryptographically signed.

#### How does cryptocurrency work?

- Cryptocurrency runs on blockchain technology which is simply a digital ledger of transactions.

- This ledger (or database) is distributed across a network of computer systems.
- No single system controls the ledger and instead, a decentralized network of computers keeps a blockchain running and authenticates its transactions.
- Bitcoin and other cryptocurrencies are essentially codes recorded on a blockchain that gets longer and longer as more people use them.

### How are cryptocurrencies bought?

- **Buying it from someone** – It usually happens in two ways
  1. An exchange-facilitated transaction
  2. A peer-to-peer transaction
- Cryptocurrency exchanges are platforms that broker the trading of cryptocurrencies for other assets, including digital and fiat currencies.
- They are independent and operate just like stock exchanges do globally.
- Crypto exchanges operating in India include WazirX, CoinDCX, CoinSwitch Kuber, Zebpay, Bitbns, Giottus, etc.
- Peer to peer (P2P) trading is the act of buying and selling cryptocurrencies directly between users without a third party or intermediary.
- **Mining new cryptocurrencies** - Mining is a process of creating new crypto coins by solving complex mathematical equations.
- The transactions using cryptocurrency is complete only when a “miner” verifies the transaction as legitimate.
- This verification process requires miners to solve complex equations and those who do that first are paid a fraction of the transaction as a fee for their effort.

### How are the cryptos sold for INR?

- The Indian exchanges allow sale of cryptocurrencies in exchange for INR as well.
- But many of the smaller banks that support the transactions do not have the necessary digital infrastructure to handle the volumes of withdrawal.
- The volatility experienced by these virtual currencies and disruption in withdrawal services is a common occurrence.

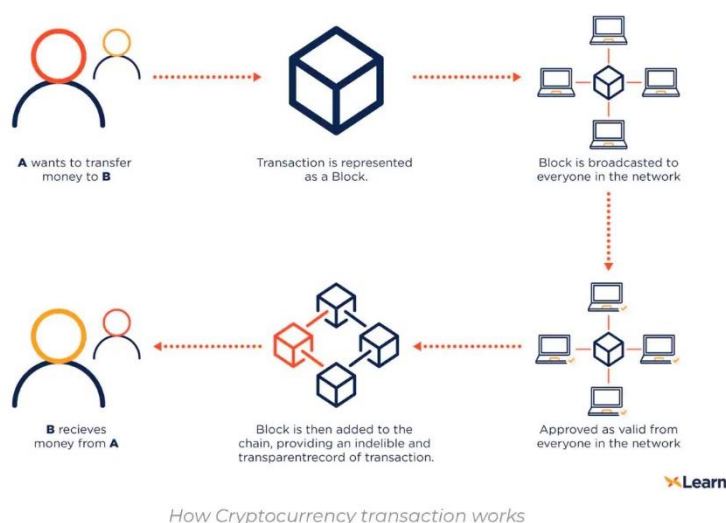
### What are the pros and cons of cryptocurrency?

#### Pros of cryptocurrency

- Potential for high returns
- Transparency
- No chance of personal information leakage
- Immediate and secure ownership transfer
- Potential diversification
- Instant and 24 hour accessibility

#### Cons of cryptocurrency

- Illegal activities can be performed
- Loss risk is high
- Cryptocurrency market is highly volatile
- Poor store of value and limited acceptance
- Difficult to comprehend
- Challenges of market fluctuations



### What alternatives are available against volatile cryptocurrencies?

- Stablecoins are a type of cryptocurrency that offer more stability than other cryptos because they are backed by assets.
- Their market value is pegged to some external reference such as the US dollar thus giving it an intrinsic value.
- Stablecoins achieve their price stability via collateralization or through algorithmic mechanisms of buying and selling the reference asset or its derivatives.
- Most of the sovereign governments push for stablecoins such as Tether, USD Coin and Diem (proposed by Facebook's parent company Meta) as it could increase the reach of the fiat currencies in the digital ecosystem.
- Stablecoins attempt to bridge the gap between fiat currencies and cryptocurrencies and there are three categories of stablecoins.
- **Fiat-Collateralized Stablecoins** - These stablecoins use a specific amount of a standard fiat currency, like the US dollar, as collateral to issue crypto coins.
- Other forms of collateral can include precious metals like gold and silver and commodities like oil.
- Tether (USDT) and TrueUSD are popular crypto coins that are backed by dollar deposits.
- **Crypto-collateralized stablecoins** - Here the underlying collateral is another cryptocurrency instead of a tangible commodity or a fiat currency.
- An example of crypto-backed stablecoin is **dai**, which is pegged to the U.S. dollar and runs on the Ethereum blockchain.
- **Algorithmic Stablecoins** - These stablecoins use a computer algorithm to keep the coin's value from fluctuating too much.

### What are the risks in stablecoins?

- The credibility of stable coins such as tether has been the subject of controversy because the issuer of the coins may not actually hold fiat currencies against the tether or may not hold them in sufficient quantities.
- The providers promise they have reserves worth 100% of the value of their stablecoins, but that's not quite accurate.
- A large part of the assets are based on commercial paper and is not cash equivalent thereby posing a solvency risk in the event of a sudden collapse in the value of these assets.
- Another issue is the **e-dollarisation** as most stablecoins are likely to be pegged to the US dollar.
- The US might actually see that as an advantage to strengthen the reach of the dollar which in turn disincentivises the regulation of stablecoins.

### How can this play out in India?

- Though India may patronize the use of a digital rupee as a legal tender and peg it to Indian rupee, banning other cryptos as asset classes may not be completely feasible as it may delink India from the rest of the world.
- India may need to allow the conversion of other cryptocurrencies into a digital rupee for regulating the same in the Indian market.
- This could bring in the required certainty if the digital rupee is compared to USD in the international market in the same way as the physical rupee

## 7.6 Challenges posed by Automation

### What is the issue?

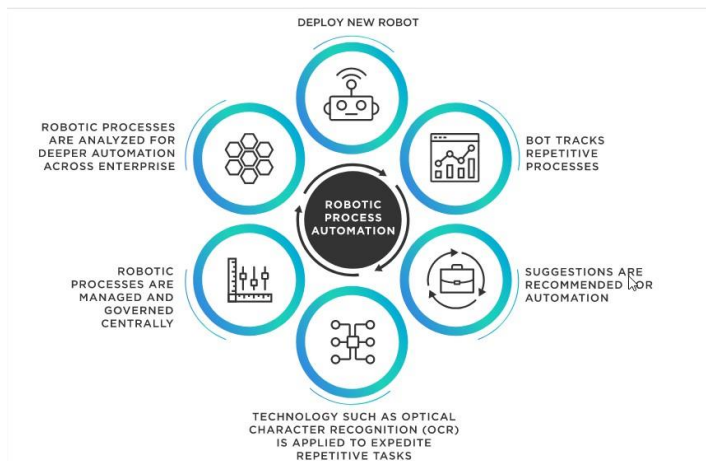
Over the past decade, automation has increased across sector and it is imperative to consider multiple approaches in order to overcome the challenges posed by them.

### What is the significance of automation at present times?

- Automation is the fourth irreversible trend after globalization, digitization and mobility.
- According to a report by McKinsey, around 88% of finance and insurance executives, and 76% of IT executives reported an increased implementation of automation since the pandemic.
- **Robotic Process Automation** - RPA is a software technology that is used to build, deploy, and manage software robots that emulate humans actions interacting with digital systems and software.



- **Intelligent automation** – IA, also called as cognitive automation is a combination RPA , business process management (BPM) and artificial intelligence (AI) that streamlines and scales decision-making across organizations.
- Intelligent automation is comprised of three cognitive technologies.
  1. **Artificial intelligence** - This is the decision engine of IA which uses machine learning and complex algorithms.
  2. **Business process management** - It automates workflows to provide greater consistency to business processes.
  3. **Robotic process automation** - It uses software robots, or bots, to complete back-office tasks, such as extracting data or filling out forms.



### What are the benefits of automation?

1. Accelerated transformation
2. Major cost savings
3. Greater resilience
4. Higher accuracy
5. Improved compliance
6. Boosted productivity
7. Increased employee satisfaction
8. Improve customer experience

### INTELLIGENT AUTOMATION

Automation of tasks that facilitate an end to end business process leveraging IDP, iBPMs, RPA, ML, as well as, AI.



### What are the challenges in the automation?

- **Selecting the right adoption approach** - In a bottoms-up approach, automation is usually seen as a back-office necessity, restricting its value and benefits to a few departments.
- In a top-down approach, creating a fully automated enterprise is seen as a strategic business enabler that promotes competitive advantage.
- **Employee involvement** – Only if large number of employees use automation, it will result in greater return on investment.
- **Using low-code and citizen developer concepts** - Low-code platforms employ visual, drag-and-drop techniques instead of traditional lines of programming.
- However, it might lead to difficulties in enforcing standards and could also cause security issues.

### How to overcome these challenges?

- Task mining and process mining capabilities of an automation platform can be determined to determine the best way for enterprise automation.
- Business leaders must also deploy multiple integrated automation solutions to benefit the overall business.
- A hybrid approach can be used to determine what to automate in which a feedback loop is created that amplifies use cases and drives adoption.
- It is imperative to have a mechanism to regulate citizen developer concepts and to ensure alignment with the organizational strategy.

## 8. HEALTH

### 8.1 A Close Reading of the NFHS-5

#### Why in news?


The findings of Phase-II of the 2019-21 National Family Health Survey (NFHS-5) was released by the Union Ministry of Health and Family Welfare.

#### What is the survey about?

- The NFHS is a large-scale, multi-round survey conducted in a representative sample of households throughout India.
- This year, over 6 lakh households across the country were surveyed for this exercise.
- The NFHS provides estimates on key indicators related to population, family planning, child and maternal health, nutrition, adult health, and domestic violence, among others.
- The Ministry of Health and Family Welfare, Government of India, has designated **International Institute for Population Sciences (IIPS)** as the nodal agency for the NFHS.
- NFHS was funded by the United States Agency for International Development (USAID) with supplementary support from UNICEF.
- The First National Family Health Survey (NFHS-1) was conducted in 1992-93.

**Hunger watch**  
The nutritional status of children in India barely improved in 2019-20 from the levels in 2015-16, the National Family Health Survey-5 data show (IN %)

Indicator	2019-20	2015-16	2005-06
Children aged six to 59 months who are anaemic	67.1	58.6	69.4
Children under five who are stunted	35.5	38.4	48
Children under five who are wasted	19.3	21	19.8
Children under five who are severely wasted	7.7	7.5	6.4
Children under five who are underweight	32.1	35.8	42.5
Children aged six to 23 months receiving an adequate diet	11.3	9.6	-
Institutional births	88.6	78.9	38.7



#### What are the key findings of the report?

- Population** - The Total Fertility Rates (TFR) has declined from 2.2 to 2.0 at the national level, even below the replacement rate of 2.1.
- This means that the total population has stabilised and therefore politicians need to devote their energies to urgent health matters, instead of pointing out the population explosion.

**TFR** is the average number of children born to a woman during her lifetime whereas **Replacement Fertility Rate** is the level of fertility at which a population exactly replaces itself from one generation to the next.

- Sex ratio** - Nationally, there are 1,020 adult women per 1,000 men portraying that women outnumber men in India for the first time but this raises question on whether this signals the beginning of the end of a tenacious problem of deep-rooted son preference.
- Nationally, the SRB has improved from 919 in 2015-16 to 929 in 2019-21, but it is still short of the natural SRB.
- The adult sex ratio is shaped by many factors other than sex selective abortions and in household surveys, the adult sex ratio might also be affected by sampling errors.
- Therefore, there is a need to recognise that the move to a small family size combined with persistent son preference is likely to impede the improvements in SRB.
- Anaemia** - The incidence of anaemia has increased from 58.6 to 67% in under-5 children, from 53.1 to 57% in women and from 22.7 to 25% in men.
- Anaemia which is characterised as a serious public health concern by WHO has to be focussed as it is as worsening as the COVID-19 effect.
- Malnutrition** - The three indicators of malnutrition - stunting, wasting and underweight showed an overall improvement.
- There is also increase in the proportion of overweight children, women and men with serious health consequences in the form of non-communicable diseases.
- Breastfeeding** - Exclusive breastfeeding to children under age 6 months has shown an improvement in all-India level from 55 percent in 2015-16 to 64% in 2019-21

### Child Nutrition indicators

Stunting (low height-for-age)

Wasting (low weight-for-height)

Underweight (low weight-for-age)

### All-India level data

Declined from 38% to 36%

Declined from 21% to 19%

Declined from 36% to 32%

- IMR – Infant Mortality Rate has declined marginally across states which can be attributed to the increased institutional births.
- IMR is the number of infants who die before reaching the age of one year, per 1,000 live births.
- **Gender related indicators** - Indicators on use of hygienic methods of protection during menstrual period among women between 15-24 years of age, and spousal violence among married women were included

### What are the notes of caution about the survey?

- The NHFS does not have data on micronutrients that are essential for body functions such as producing enzymes, hormones and other substances needed for growth and development.
- Some analyses have suggested that the rate of progress has slowed down based on comparisons between NHFS-4 and NHFS-5.
- The data for the second phase of NFHS-5 have been, to a large extent, collected during the unusual conditions of the COVID-19 pandemic but the deterioration in public health indicators cannot be attributed entirely to the pandemic.
- The data that increase in caesarian births in private health facilities (47.5% births are by C-section) call into question unethical practices of private health providers who prioritise monetary gain over women's health and control over their bodies.
- The survey highlights deep inequalities in health outcomes and an action plan to improve India's health needs to be inclusive, firm in its commitment and backed by solid resources.

## 8.2 Project Sampoorna : Bongaigaon's Response to Malnutrition

### Why in news?

Project Sampoorna which was successfully implemented in Bongaigaon district of Assam is a model that can be easily implemented anywhere in reducing child malnutrition

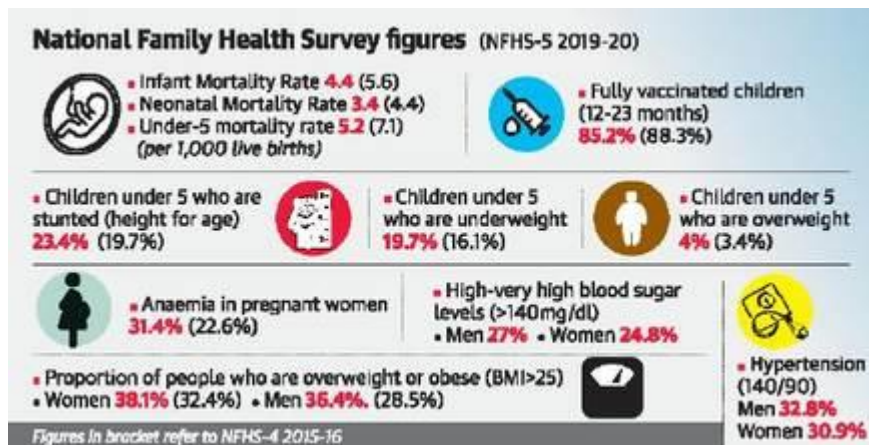
### What is the project about?

- The Bongaigaon district has 2,416 malnourished children, 246 cases of Severe Acute Malnutrition (SAM) and 2,170 instances of Moderate Acute Malnutrition (MAM).
- Project Sampoorna was launched to target the mothers of SAM/ MAM children with the tagline being **'Empowered Mothers, Healthy Children'**.
- It was based on the success of the community-based COVID-19 management model (Project Mili Juli).
- Under this project, the mother of a healthy child of an Anganwadi Centre was paired with the target mother and they would be **Buddy Mothers**.
- They were given diet charts to indicate the daily food intake of their children and would have discussions on all Tuesdays at the AWC.
- Since the major hindrance to the project was patriarchy, the mothers were enrolled in Self Help Groups (SHGs) under the National Rural Livelihoods Mission (NRLM).
- Meanwhile, 100 millilitres of milk and an egg on alternate days for the children for the first 3 months were provided so that their mothers could stabilise themselves in the newly found jobs.

### How was it interlinked with other programmes?

- Sampoorna is in accordance with the UN Sustainable Development Goals and those set by the UN Secretary General António Guterres in the 2021 Food Systems Summit.
- It complements in achieving the **'Kuposhan mukt Bharat'** (Malnutrition Free India) and the National Nutrition Mission - **POSHAN Abhiyaan**.

- It was during **Poshan Maah** (Nutrition Month) in September 2020 that 2,416 children were identified to be malnourished in the district of Bongaigaon.
- The National Family Health Survey (NFHS)-5) has documented the stunted, wasted, underweight and the number of anaemic women and children in the district.
- Project Saubhagya** that was designed to reduce the maternal mortality rate and infant mortality rate of the district was utilized to endorse these figures.
- A real time data sheet is updated by field-level doctors as and when a high risk pregnancy is identified, which is then followed up till safe delivery.



### What was the impact of the Project Sampoorna?

- After three months of Project Sampoorna, out of 246 SAM children, 11% continued to be SAM, 11.4% improved to MAM and 76.8% became normal.
- By September 2021, 92.3% SAM and 98.9% MAM children were normal.
- Children who had not improved were checked and treated by doctors under the **Rashtriya Bal Swasthya Karyakram** (RBSK).
- Project Sampoorna had prevented at least 1,200 children from becoming malnourished over the last year.
- The National Nutrition Mission and the State government recognised the project in the 'Innovation Category'.
- This model is successful in both women empowerment as well as tackling the malnutrition.

## 8.3 Combating Anemia

### What is the issue?

In an effort to combat the serious problem of anaemia due to malnutrition, Indian PM made an announcement to mandate rice fortification in all social safety net schemes by 2024.

### Why should anaemia be addressed immediately?

- Despite reducing anaemia among children over the last decade, anaemia still impacts more than half of children and women.
- WHO has declared anaemia among women and children as a "severe" public health problem, demanding immediate attention.
- Further, recent statistics indicate rise in anaemia levels among women and children in most States/UTs (NFHS-5).

### What are the known causes?

- Iron deficiency**-anaemia is the biggest cause of disability for the past 10 years.
- It contributed 20% direct and 50% associated maternal deaths in India.
- Its economic burden is equivalent to about 4% of GDP.
- Apart from iron, deficiency in micronutrient like vitamin B12, vitamin A, folate and zinc also contribute to rising anaemia levels.
- Vitamin B12 deficiency** impacts one in six pre-school children and one in three adolescents.
- Folate deficiency** affects one in three school-aged children and one in four adolescents.
- The nutritional status and associated nutrient deficiencies is primarily a reflection of **unbalanced and poor diet**.
- Low consumption of nutritious food like fruits, vegetables, milk, pulses, meat, poultry, etc is also a reason.



- Only 6% and 9% of children between 6-23 months consume the minimum acceptable diet and iron rich food, respectively.
- There is a gap of nutritious dietary intakes when compared to Recommended Dietary Allowance (RDA).
- E.g. 75% and 50% lower iron amongst rural population and adolescents; 50% lower vitamin A; and 50-75% lower folate and riboflavin.
- FAO recently attributed **affordability** of cost intensive healthy diets as a constraint in achieving the nutrition related SDGs globally.
- At \$1/person per day, India's spending on diet is significantly lower than the EAT Lancet dietary recommendations of \$3-5.
- Nearly two-thirds of the rural poor cannot afford a nutritious diet that meets India's national food-based dietary guidelines.

### How is rice fortification the right option?

- If eggs and milk are included, the cost of nutrition would increase substantially.
- On the other hand, rice, a staple cereal, is consumed by 65% of the population (6.8 kg per capita per month).
- Thus, fortifying rice with micronutrients is an ideal option to address malnutrition within a short period, particularly among vulnerable populations.

### What are the other measures?

#### Standardisation

- FSSAI is working on Fortified Rice Kernels standardisation.
- It is also enabling setting up more National Accreditation Board for Testing and Calibration Laboratories accredited labs and BIS Standardisation of Extruders/Blenders, to ensure quality.

## RICE FORTIFICATION

Fortifying rice involves grinding broken rice into powder, mixing it with nutrients like iron, folic acid and vitamin B12, and then shaping it into rice-like kernels using an extrusion process. These fortified kernels are then mixed with normal rice in a 1:100 ratio and distributed for consumption.



### DALY

WHO's meta-analysis - An outlay of around ₹2,800 crore per annum for rice fortification can avert 35% of the total or 16.6 million Disability Adjusted Life Years (DALYs) per year with no known risk of toxicity.

### ANAEMIA

Amounting to only around 1% of the food subsidy bill in 2018-19, rice fortification has the potential to avert a total of 94.1 million anaemia cases that can lead to savings of ₹8,098 crore over a period of 5 years.

### 2024 TARGET

Universalisation of rice fortification by 2024, will cover about 100 crore target population, including about 20 crore women of reproductive age.

### Multi-pronged strategy

- FCI is working to ensure distribution of 13.70 lakh tonnes of fortified rice in ICDS and MDM.
- Government has included millets under NFSA as Dietary diversification is the sustainable long-term solution to combat anemia and micronutrient deficiencies.
- PM recently launched 35 crop varieties with higher nutrient-content to combat malnutrition.
- Under POSHAN 2.0, MoWCD has urged all Aspirational Districts to establish poshan vatika or nutri-garden to promote locally grown nutritious food.
- Ministry of Health in 2013 launched "**National Iron Plus Initiative**".
- Iron and Folic Acid Supplementation and Deworming for improving the haemoglobin levels were undertaken.
- **National Nutritional Anemia Control Program** aims at decreasing the incidence of anemia by promoting regular consumption of iron rich foods, providing iron and folate tablets and treatment.
- To tackle the problem of anemia due to malaria, Long Lasting Insecticide Nets and Insecticide Treated Bed Nets are being distributed.
- **Anemia Mukht Bharat (AMB)** focuses on reducing anemia amongst pregnant women (from 50% in 2016 to 32% by 2022).

- The **6x6x6 strategy** under AMB implies six age groups, six interventions and six institutional mechanisms in reducing the incidence of anemia.

**Anemia Mukt Bharat aims to reduce the prevalence of anemia through a 6 x 6 x 6 strategy.**



- In **ICDS**, iron and folic acid tablets and megadose of vitamin A are distributed to prevent iron deficiency anaemia and xerophthalmia respectively.
- 184 High Priority Districts have been prioritized for Reproductive Maternal Newborn Child Health+ Adolescent (**RMNCH+A**) interventions for achieving improved maternal and child health outcomes.

*A new study says regular consumption of millets can improve hemoglobin and serum ferritin levels and reduce iron deficiency anemia.*

## 8.4 100 crore COVID-19 Vaccine Doses

### Why in news?

India completed 100 crore doses of COVID-19 vaccines on 21 October 2021, in about 9 months since the vaccination drive began.

### Why is it laudable?

- This is the fastest rate of vaccination, possibly anywhere in the world.
- China has administered almost twice the number of doses to its citizens but it had also started out much earlier than anyone else.
- India began only in mid-January 2021, with a limited supply of vaccines.
- The shortage of vaccines was felt most acutely during the devastating second wave, the worst phase of the pandemic.
- The challenge was handled with contributions of vaccine manufacturers and the wide network of healthcare workers.
- Crossing the one-billion mark also became possible as India stopped the export of vaccines, impacting most low- and middle-income countries.

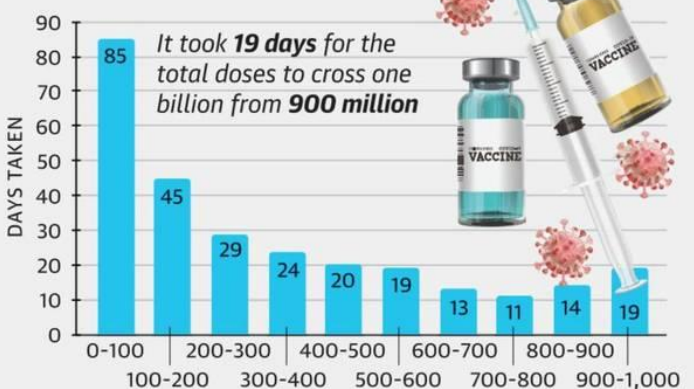
### What are the tasks ahead?

- The 100 crore doses achievement is just a milestone and not the destination.

### Adult population

- The bigger task is to vaccinate the entire adult population of about 94 crore.
- But in this goal, India has just crossed the halfway mark.
- Even as vaccine supply is increasing, the pace of the vaccination drive has to be speeded up to meet the objective.
- Efforts should be directed at increasing the pace of second dose vaccination.

### Dose progression | The chart shows the days taken for total COVID-19 vaccination doses in India to cross every 100 million dose mark:



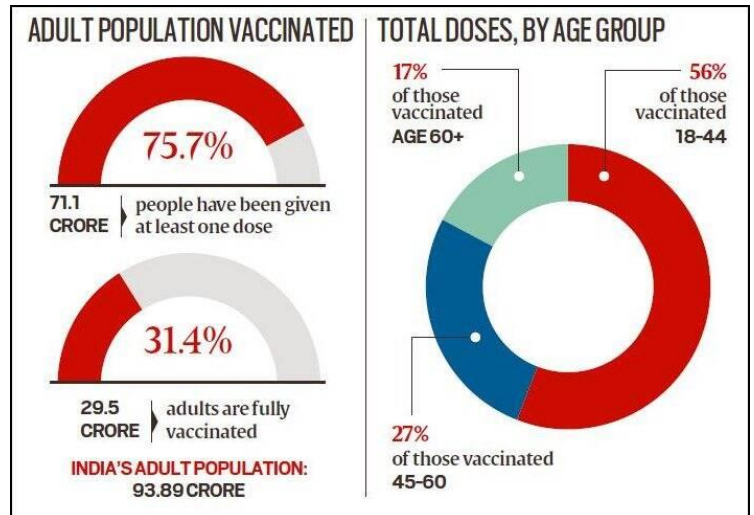


## Children

- If the entire population of about 135 crore is taken into account, then an even smaller fraction of the job has been completed.
- Vaccines for people under the age of 18 years are just being approved, and there is a long way to go.

## Booster doses

- As of now, India looks all set to vaccinate about 70-80% of its adult population by the end of 2021.
- But by that time, the group that received their vaccine in January and February might find its immunity waning.
- India thus has to remain open to the possibility of providing booster doses from sometime in 2022.
- The discussion on booster doses in India, their frequency, timing, etc is yet to begin.



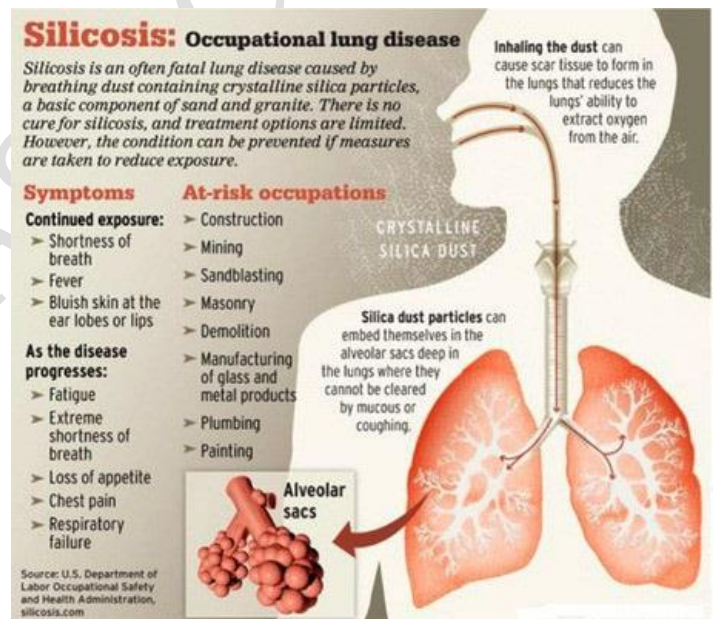
## 8.5 Silicosis Prevention

### What is the issue?

Countless workers engaged in mines, construction and factories in India are silently dying of exposure to dust (Silicosis), utmost exploitation and apathy.

### What is silicosis?

- Silicosis is part of the pneumoconiosis family of diseases.
- It is a long-term lung disease caused by inhaling large amounts of crystalline silica dust, usually over many years.
- **Challenges to treatment** - Silicosis usually develops after being exposed to silica for 10-20 years, or can even occur after only a few months of very heavy exposure.
- The symptoms usually take many years to develop. So, identifying and treating are challenging.
- The symptoms can also continue to get worse, even if someone is no longer exposed.



### What is Rajasthan's model for Silicosis prevention?

Rajasthan has the top-most share of over 17% in value of mineral production in India.

- Notified silicosis as an 'epidemic' in 2015, under the Rajasthan Epidemic Diseases Act, 1957.
- A formal Pneumoconiosis Policy in 2019 [only next to Haryana]
- 'Silicosis portal' hosted by the Department of Social Justice and Empowerment.
- A system of worker self-registration and diagnosis through district-level pneumoconiosis boards
- Compensation from the District Mineral Foundation Trust (DMFT) funds to which mine owners contribute
- In just 2 years, the State has certified and compensated over 25,000 patients of silicosis, of which 5,500 have already died of the disease.

### What are the shortfalls in the system?

- In the mining sector alone, none of the silicosis cases diagnosed has been notified by mine owners.

- Nor are the cases reported by the examining doctors to the Directorate General of Mines Safety (DGMS), Ministry of Labour and Employment.
- They are legally required to report, according to Section 12 of the **Occupational Safety, Health and Working Conditions (OSHC) Code, 2020**.
- But only 10%-20% of the over 33,100 mining leases and quarry licences in Rajasthan are DGMS-registered.

#### Why is reporting the cases significant?

- Shifts the paradigm from compensation to prevention
- Fixes the responsibility on mine owners, who now continue to slip away despite violating safety and preventive protocols
- The DGMS, the sole enforcement authority for health and safety in mines, can take action against mine owners.

#### What are the other provisions and concerns in the OSHWC Code?

- Section 6 of the Code - Annual health checks free of cost to the employees
- Rules 92 to 102 in Section 6 of the code provide for initial and periodic examinations of all mine workers from their time of joining.
- But the draft Central rule 6 of Section 6 fixes an age floor of 45 years for workers in all establishments (including mines) to be eligible for the health checks.
- Section 20 - Powers to the DGMS to conduct health and occupational surveys in mines
- It places no obligation on the mine owner to provide any form of rehabilitation - Alternative employment, or payment of a disability allowance/lump sum compensation for workers found medically unfit.
- Such provisions in the earlier Mines Act linked to the Workmen's Compensation Act (also subsumed in the Code), have been deleted.
- Now, 'medically unfit' workers are expected to leave the job and fend for themselves.
- In Rajasthan, a compensation of Rs. 3 lakh is provided from the DMFT. In case of other states, even this is not available.
- The immediate impetus for silicosis prevention could come from course correcting Section 6 and Section 20 of the OSHWC Code.

#### What are the measures needed?

- State governments should use their powers to prevent the impacts on workers.
- **Guidelines** - The related State departments, in close dialogue with the DGMS, must draw up detailed guidelines for district-wise health surveys.
- The State rules must ensure that the health checks are provided to all workers in all establishments, irrespective of age.
- The State Advisory Board (Section 17 of the Code), along with technical committees, must be quickly constituted, with workers and their representatives having a say in them.
- **Local manufacturers** must be incentivised to innovate and develop low-cost dust-suppressant and wet-drilling mechanisms.
- These could either be subsidised or provided free of cost to the mine owners.
- Existing prototypes must be tested and scaled up.
- **DMFT funds** - These are both underutilised and spent in an entirely ad hoc manner.
- Their haphazard allocation for non-mineworker-related expenditure must be replaced by a streamlined and accountable system.
- Mineworkers should benefit from clearly defined budget heads.
- E.g. prevention (including innovation fund and subsidy for wet drilling equipment), disability compensation, solatium, administrative expenses
- For all this to materialise, bringing worker-employer identification on record is crucial.



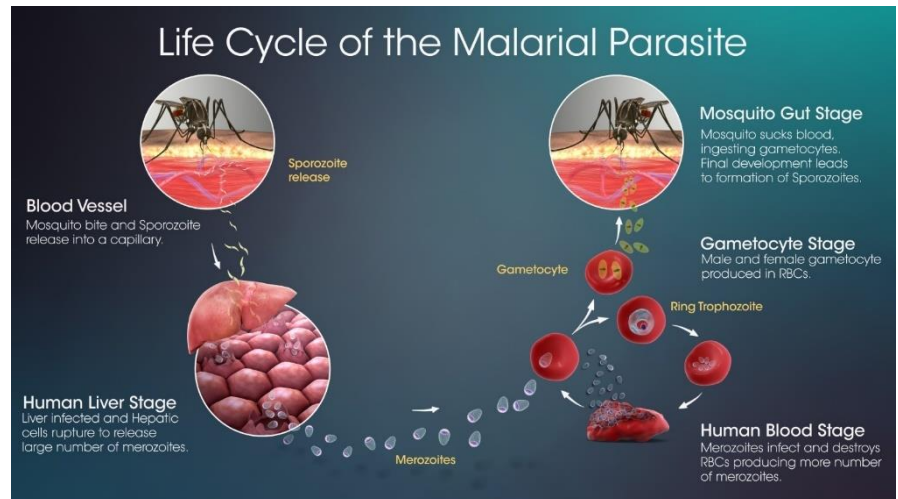
## 8.6 Malaria and Vaccine Hunt

### Why in news?

WHO has allowed widespread use of the world's first malaria vaccine, **RTS,S** as part of a pilot project in parts of Africa.

### What is Malaria?

- Malaria is a disease caused by a **Plasmodium** parasite
- It is usually transmitted by the bite of infected female **Anopheles** mosquitoes.
- The severity of malaria varies based on the species of Plasmodium – *Plasmodium falciparum* and *Plasmodium vivax* are fatal
- Symptoms of the disease includes chills, fever and sweating, usually occurring a few weeks after being bitten.
- It is both preventable and curable.
- The parasites' life cycle includes mosquitoes, human liver, and human blood stages.



### What is the status of Malaria?

- As per WHO, in 2019, nearly half the world's population was at risk of malaria, while most cases and deaths occur in sub-Saharan Africa.
- Even today, it kills over four lakh every year, according to WHO.
- In 2019, India had an estimated 5.6 million cases of malaria, although deaths due to malaria have come down sharply
- Children under five are the most vulnerable group accounting for about two thirds of all malaria deaths.

### What is the vaccine that has been cleared for widespread use?

- **RTS,S/AS01 (RTS.S)**, trade name **Mosquirix**, is the first and to date only, vaccine shown to have the capability of significantly reducing malaria.
- It is the result of a partnership between GlaxoSmithKline and the global non-profit PATH's Malaria Vaccine Initiative, with grant funds from the Bill & Melinda Gates Foundation.
- It is a recombinant protein vaccine, which means it includes DNA from more than one source.
- The vaccine acts against *P. falciparum*, the most deadly malaria parasite globally.
- However, it offers no protection against *P. vivax* malaria.
- It is a 4 dose vaccine and in largescale clinical trials, the vaccine was able to prevent approximately 4 in 10 cases of malaria over a 4-year period.

### What measures have been taken to eliminate malaria?

- In 1953, the Government of India launched the National Malaria Control Programme (NMCP) with a focus on indoor residual spraying of DDT.
- National Malaria Eradication Programme (NMEP) was launched in 1958 which reduced the number of malaria cases and deaths.
- In 2003, malaria control was integrated with other vector borne diseases under the **National Vector Borne Disease Control Programme (NVBDCP)** as all such diseases share common control strategies.
- Administration of drugs like Chloroquine, Artemisinin-based Combination Therapy (ACT) started.
- The **National Framework for Malaria Elimination in India 2016–2030** aims to eliminate malaria (zero indigenous cases) throughout the entire country by 2030.

- The Global technical strategy for malaria 2016–2030 was adopted by the World Health Assembly in 2015 to reduce global malaria incidence and mortality rates by at least 90% by 2030.
- The **Global Fund to Fight AIDS, Tuberculosis and Malaria** is an international financing and partnership organization that aims to attract, leverage and invest additional resources to end the three epidemics.
- Over the last two decades, 11 countries have been certified by the WHO Director-General as malaria-free - UAE, Morocco, Turkmenistan, Armenia, Sri Lanka, Kyrgyzstan, Paraguay, Uzbekistan, Algeria, Argentina and El Salvador

#### What are the challenges in the elimination of Malaria?

- Long-time taken to develop a vaccine against malaria is a concern.
  - Mosquirix itself is the result of more than 30 years of research and development.
- The complexity of the malaria-causing parasites' life cycle and subsequent antigenic variations of the parasite poses difficulty.
- Because malaria disproportionately affects low- and middle-income countries that lack robust health infrastructure, the vaccine manufacturers have little incentive for malaria vaccines.
- There is increasing evidence for the failure of artemisinin-based therapy (drug resistance) for *Plasmodium falciparum* malaria either alone or with partner drugs.
- Majority of malaria in India is diagnosed and treated in private sector which has no obligation to follow government guidelines, use recommended drugs, or report cases to State authorities.

#### What measures needs to be taken?

- States will have to tailor their programmes to achieve elimination especially in tribal areas where the burden of malaria is often the highest.
- Partnership between communities, civil society, private sector, and public health agencies is required.
- Integrated Vector Management approach as insisted by WHO is the need of the hour.
- The next step should be speedy and meticulous implementation of the vaccine programme from the lab to the field.

### 8.7 PM POSHAN Scheme

#### Why in news?

The existing Mid-Day Meal scheme which provides hot meals to students will be renamed as the **National Scheme for PM Poshan Shakti Nirman**.

#### What are the key features of the scheme?

- It is a Centrally-Sponsored Scheme that aims to enhance the nutrition levels of schoolchildren
- Eligibility - All school going students of classes I to VIII studying in government and government-aided schools are eligible to avail the benefits.
- Duration - For a period of five years ( 2021-22 to 2025-26)
- The total budget of the scheme will amount to Rs. 1, 30,794.90 crore.
- The scheme will be extended to pre-primary students or Bal Vatikas of Government and Government-aided primary schools.
- The concept of **TithiBhojan** (community participation programme in which people provide special food to children on special occasions) will be encouraged extensively.
- Government is also promoting the development of **Nutrition Gardens** in schools.
- Social Audit of the scheme is made mandatory in all the districts.
- Special provision is made for providing supplementary nutrition to children in aspirational districts and districts with high prevalence of Anemia.
- Cooking competitions will be encouraged at all levels right from village level to national level to promote ethnic cuisine.

- Involvement of Farmers Producer Organizations (FPO) and Women Self Help Groups in implementation of the scheme will be encouraged.
- While Centre bears the entire cost of food grains, their transportation, management, monitoring and evaluation, components such as cooking costs, payments to cooks and workers are split in a 60:40 ratio with states.

### What is the need for this scheme?

- The findings in Phase I of the NFHS-5 for 22 States and Union Territories in December 2020 were shocking
  1. Childhood stunting rose in 13 States
  2. High prevalence of anaemia among children and women
  3. Wasting was a serious concern in 12 States
- The worsening case of malnutrition threatens to deprive millions of children of a fully productive adult life.
- The **National Education Policy (NEP)** has also recommended that pre-school education should be formalised and this scheme is a step towards that.

### A systems approach to nutrition



### Can this scheme bring the desired outcome?

- Mission Poshan 2.0 (Saksham Anganwadi and Poshan 2.0) has been announced in budget 2021-2022 as an integrated nutrition support programme to strengthen nutritional content, delivery, outreach and outcomes.
- The West Bengal government accused the Centre of just changing the name of the mid-day meal scheme.
- While the NEP proposes breakfast in schools, the government has not taken any decision on that yet.
- The renewed plan should introduce a greater diversity of diets that compensates for micronutrient and protein deficiency.
- The Government must fiscally strengthen the **Saksham Anganwadi-Mission POSHAN 2.0** which amalgamates POSHAN Abhiyan and schemes covering anganwadis, creches and adolescent girls.