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— Disclaimer —

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

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SECTION: A
(MAINS)

CURRENT AFFAIRS

UNDER REPRESENTATION OF WOMEN IN INDIAN POLITICAL SYSTEM

CONTEXT

It's 2021. It seems redundant to state this fact, but a reminder is needed considering the state of political representation in the country. In the recent assembly elections, 70 women made it to their state legislatures. But

◉ BACKGROUND

- Recently 5 states have witnessed state assembly election in which women participation of Bengal in election were the most.

- West Bengal, the best among the five states, will have just 14 per cent women, while Puducherry will have an assembly with only one woman as member.

- Kerala with a marginal increase, the numbers have either remained consistent, or have actually worsened as compared to the 2016 election.

- Despite the dismal numbers, or rather because of them, the victory of each of these 70 women is remarkable, whether they make exceptional leaders or not.

- The numbers are eventually a symptom of a political culture that is deeply patriarchal, and often outright sexist, and for women to make it thus far can often mean surviving a thousand battle cuts.

What Global Gender Gap Report say

- India is the third-worst performer country in South Asia in World Economic Forum's Global Gender Gap Report 2021.

- According to the report, India has slipped 28 places to rank 140th among 156 countries.

- In Global Gender Gap Index 2020, the country had ranked 112th among 153 countries.

- It is noteworthy that India has closed 62.5% of its gender gap to date. The report said India's gender gap on this dimension widened by 3% this year, leading to a 32.65 gap closed to date.

- Most of the decline occurred on the political empowerment subindex, where India regressed 13.5 percentage points, with a significant decline in the number of women ministers (from 23.1% in 2019 to 9.1% in 2021).

- Among India's neighbours, Bangladesh ranked 65, Nepal 106, Pakistan 153, Afghanistan 156, Bhutan 130, and Sri Lanka 116. Among regions, South Asia is the second-lowest performer on the index, with 62.3% of its overall gender gap closed.

◉ ANALYSIS

The current scenario

- In a country with deplorable levels of women in the workforce, and social-cultural norms that heavily police women's mobility and participation in public life, getting involved in electoral politics is a far-fetched dream for most women.

- Politics is essentially a public act, and research shows that women's ability to negotiate a space independent of the household is an important factor in deciding if or not they will be politically active.

- Most parties express allegiance to the women's reservation bill which could pave the way for 33 per cent reservation for women in the Parliament, but how many actually field even a quarter of their candidates who are women?

- In the recent polls, women made up 8 per cent of all candidates in Assam and 11 per cent in the other four states.

- Roughly, one in every 10 individuals who contested the election was a woman.

- If that number doesn't trouble us in 2021, one wonders what will. All parties were equally guilty.

Reasons behind the under participation of women

- **Women are only vote banks:** For India's political parties, women matter, but only as vote banks. Across states, competing parties have wooed women voters with a wide range of promises including wages/allowances for "housewives", washing machines, gas cylinders, free public transport, and so on.

- ◉ **No focus on actual empowerment:** And yet, they all fail when it comes to the actual test of "empowerment" — sharing political power. This is hardly about a lack of women.

- ◉ **Lack of confidence:** It has been almost three decades since the **73rd and 74th Constitutional Amendments** paved the way for at least one-third seats to be reserved for women at the local level, thus creating a large pool of women with political experience.

  - ➤ In all four states that went to polls, this share has been increased to 50 per cent over the years.

  - ➤ Yet, male-heavy parties are simply uncomfortable about giving an opportunity to women to participate in politics at the assembly or parliamentary level.

- ◉ Male party leaders think women can only climb up to be district panchayat presidents.

- ◉ **Abuse and violence:** Women often face hostility, apathy and even abuse from their own parties. In a 2014 study by UN Women, more than half respondents (58 per cent) from India said that they faced violence and abuse from members of their own parties. The political world outside of their own parties is no less hostile to them. Sexist, misogynistic comments are rampant, and the 2021 elections were no different.

Socio Cultural Factor

- ◉ In countries like India Women are considered as the mothers and housewife and to participate in election are restricted due to patriarchal mindset of Indian society.

- ◉ In India women are considered as a weak and they are restricted only to boundary of house.

- ◉ Exclusion of women from Religious institution and religious leadership have impacted negatively on women's status and restrict them to take opportunity to participate in politics and public life.

- ◉ Lack of economic resources is the biggest obstacle to prevent to participate in politics and public life.

- ◉ Due to family responsibility women spend far more time in home than men so lesser time to participate in politics and public life.

Remedial Measures

- ◉ **Gender Equality:** Women's should have equal rights with men in the political, social, economic and cultural spheres. Even though constitution guarantees women equal right in all spheres socio-cultural factors need to be adapted to modern ethos of equality. Institutions of Governance like courts , police ,administrative bodies etc. should focus on gender equality.

- ◉ **Affirmative Action:** Action taken by the government by reserving certain percentage of seats at state legislature and parliament for women.

- ◉ **By Empowering women:** To provide education and equal health access in all spheres of life can empower women to participate in politics and public sphere. Both education and health are important for women to participate in Central, state and Panchayat election and other public field.

- ◉ **Enforcing property rights:** Despite legal rights for women to inherit paternal property women are denied property rights and thus they lack economic resources. There is need to reinforce with in society and women about their right to property.

- ◉ **Social awareness campaigns:** Long held prejudices against women need to be dismantled through concerted social campaigns with help of educational institutions, media, religious leaders, celebrities ,political leaders etc

World Economic Forum Suggestion for women empowerment

- ◉ At the macro level, there is a need for policy initiatives to empower women and tighter implementation of existing ones to reduce the gender disparity in India. But small steps also count.

- ◉ Higher representation of female leaders can be a source of inspiration for others to pursue their dreams and aspirations. Improved access to information among women can build their professional interest and increase their economic participation.

- ◉ A concerted effort between the local and national levels can drive change.

- ◉ With the WEF 2021 report data staring in our face, the country must invest and commit towards this for a more promising future to meet its commitments towards achieving the UN SDGs. We surely do not want to wait for 135 years as per the WEF Global Gender Report 2021 to bring equality between men & women,"

◉ CONCLUSION

The journeys of the 70 women going forward are not going to be easy. Even after getting elected, these battles are likely to continue, exacerbated by a media which often amplifies these narratives, instead of critiquing them. And the fact that the women are so few, less than one for every 11 MLAs, offers little solace.

ONE HEALTH APPROACH TO TACKLE THE CRISIS CAUSED BY THE PANDEMIC

CONTEXT

- **Well into the COVID-19 situation in India, the Government of India set up a National Expert Group on 'One Health' as a multi-sectoral, transdisciplinary, collaborative group.**

- **The move recognised that several recent human pandemics, including COVID-19, influenzas (H1N1, H7N9) and Severe Acute Respiratory Syndrome (SARS) have animal origins, and that a One Health approach has long been advocated by the World Health Organization (WHO), Food and Agriculture Organization (FAO) and World Organisation of Animal Health (OIE).**

⊙ BACKGROUND

- There are an estimated 25 million farmers in some form of poultry business in India producing about 4 billion broilers and 93 billion eggs a year. The industry is growing at 6-8 per cent per annum.

- The COVID-19 pandemic in India in its early phase (January to March 2020) had been erroneously linked to the consumption of chicken.

- This may have, in part, been on account of bird flu outbreaks in several states in the preceding few months. Significantly, it led to a dramatic crash in poultry consumption and prices, followed by the lockdown and its economic consequences.

- With the continued lack of demand from the hotel-restaurant-catering segment, the poultry industry continues to be in a state of crisis and the ongoing bird flu outbreaks across 10 states have slowed the recovery process.

- On the back of the pandemic, the 'One Health' approach has been reignited to tackle preventable conditions at the animal-human-ecosystems interface.

⊙ ANALYSIS

What is one Health Concept?

- One Health is an approach that recognizes that the health of people is closely connected to the health of animals and our shared environment.

- One Health is not new, but it has become more important in recent years. This is because many factors have changed interactions between people, animals, plants, and our environment.

- Human populations are growing and expanding into new geographic areas. As a result, more people live in close contact with wild and domestic animals, both livestock and pets.
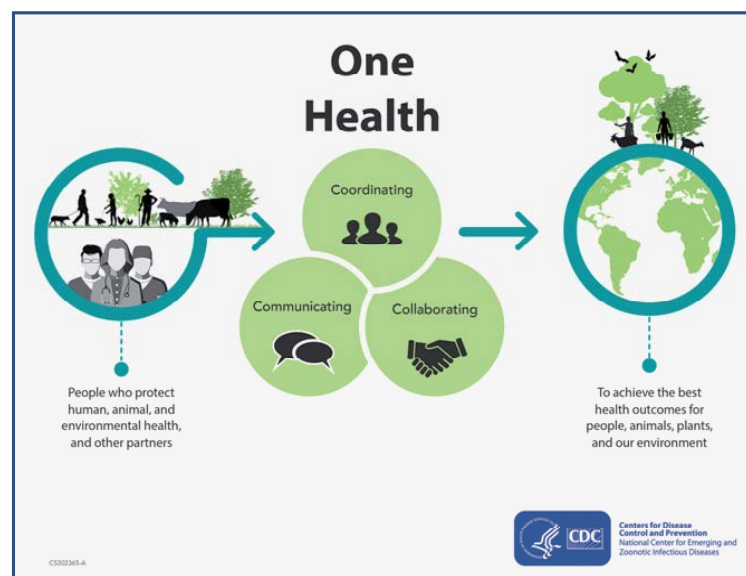
- Animals play an important role in our lives, whether for food, fiber, livelihoods, travel, sport, education, or companionship. Close contact with animals and their environments provides more opportunities for diseases to pass between animals and people.

- The earth has experienced changes in climate and land use, such as deforestation and intensive farming practices. Disruptions in environmental conditions and habitats can provide new opportunities for diseases to pass to animals.

- The movement of people, animals, and animal products has increased from international travel and trade. As a result, diseases can spread quickly across borders and around the globe.

- These changes have led to the spread of existing or known (endemic) and new or emerging zoonotic diseases, which are diseases that can spread between animals and people.

  - **Examples of zoonotic diseases include:** Rabies, Salmonella infection, West Nile virus infection, Q Fever (Coxiella burnetii), Anthrax, Brucellosis, Lyme disease, Ringworm, Ebola.

What are common One Health issues?

◎ One Health issues include zoonotic diseases, antimicrobial resistance, food safety and food security, vector-borne diseases, environmental contamination, and other health threats shared by people, animals, and the environment.

◎ Even the fields of chronic disease, mental health, injury, occupational health, and noncommunicable diseases can benefit from a One Health approach involving collaboration across disciplines and sectors.

How does a One Health approach work?

◎ One Health is gaining recognition in the different countries and globally as an effective way to fight health issues at the human-animal-environment interface, including zoonotic diseases.

◎ Scientist uses a One Health approach by involving experts in human, animal, environmental health, and other relevant disciplines and sectors in monitoring and controlling public health threats and to learn about how diseases spread among people, animals, plants, and the environment.

◎ Successful public health interventions require the cooperation of human, animal, and environmental health partners.

◎ Professionals in human health (doctors, nurses, public health practitioners, epidemiologists), animal health (veterinarians, paraprofessionals, agricultural workers), environment (ecologists, wildlife experts), and other areas of expertise need to communicate, collaborate on, and coordinate activities.

◎ Other relevant players in a One Health approach could include law enforcement, policymakers, agriculture, communities, and even pet owners. No one person, organization, or sector can address issues at the animal-human-environment interface alone.

◎ By promoting collaboration across all sectors, a One Health approach can achieve the best health outcomes for people, animals, and plants in a shared environment.

History Behind the One Health Concept

● Till the 19th century, animal medicine and human medicine were not strictly separate and research was conducted in these two fields without clear boundaries.

● By the 20th century, there was a veritable explosion of scientific knowledge and medicine became increasingly specialised and professionalised; human medicine and veterinary medicine thus diverged.

● Sir William Osler promoted the term "One Medicine" – embracing animal and human medicine – in the 19th century and Dr Calvin Schwabe revived the concept in veterinary public health.

● 'One Health' was later proposed as a concept for interdisciplinary collaboration, and soon environment health was factored in too.

● The Pilanesberg Resolution in 2001 was targeted at multilateral and bilateral donors and governmental authorities to consider potential wildlife health impacts in development projects.

● The Wildlife Conservation Society (WCS) introduced the term "One World-One Health" in 2007 along with 12 recommendations (the Manhattan Principles) that focused on establishing a more holistic approach to preventing epidemic disease and maintaining ecosystem integrity.

Barriers to implementation of One Health Approach

◎ The most important barriers to multisectoral action are political, not technical.

◎ The articulation or framing of the problem can be in terms of development, equity, economic or health gains; the extent to which this resonates with high-level political agendas is crucial to achieving buy-in from different sectors.

◎ One Health initiatives, by their multidisciplinary nature, entail working across ministries and navigating tacit institutional hierarchies and allocating leadership roles.

◎ 'One Health' consortia may also not though succeed fully if they remain a purely governmental endeavour; the cooperation and active engagement of individuals, communities and society are needed.

Recents efforts to study the Zoonotic Disease

◎ There are already several cross-cutting efforts operating in India to develop protocols for a database of research into zoonotic diseases.

◎ But to date, there is no single agency or framework that embraces all interdisciplinary sectorial players under a single umbrella to carry forward the 'One Health' agenda — even in this difficult time.

- Inarguably, the National Expert Group has a tough mandate: To "promote multi-sectoral, transdisciplinary collaboration and cooperation." Accountability, transparency and trust are essential to drive such action, but can remain elusive.

- The recently announced Prime Minister Atmanirbhar Swasth Bharat Yojana (PM-ASBY), supported by a Rs 3,500 crore loan from the Japan International Cooperation Agency (JICA), to boost the fight against the COVID-19 pandemic in India shall hopefully use One Health as a foundational principle.

⊙ CONCLUSION

India being home to a large portion of the world's livestock farmers, the absence of a policy framework that ratifies the 'One Health' approach in development and health policies is a major hurdle in eliminating poverty and poverty-related diseases. We await a vision, a strategy and a roadmap for India's 'One Health' agenda.

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INTELLECTUAL PROPERTY WAIVER FOR COVID-19 VACCINES

CONTEXT

The United States government announced support for waiving intellectual property protection for Covid-19 vaccines, saying extraordinary circumstances call for extraordinary measures. United States Trade Representative said the US will pursue "text-based negotiations" on the waiver at the World Trade Organization (WTO).

⊙ BACKGROUND

- In October 2020, India and South Africa had asked the WTO to waive certain conditions of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement that could impede timely access to affordable medical products to combat Covid-19.

- The countries had asked the TRIPS Council to recommend, "as early as possible", a waiver on the implementation, application and enforcement of four sections in the second part of the agreement.

- These sections — 1, 4, 5, and 7 — pertain to copyright and related rights, industrial designs, patents, and the protection of undisclosed information.

- The proposal had said that developing countries "especially", may face institutional and legal difficulties when using flexibilities available in the TRIPS agreement.

TRIPS Agreement

- The 1995 agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is a key legal instrument that harmonises intellectual property (IP) protection by imposing binding obligations on member countries to ensure a minimum level of protection and enforcement of IP rights in their territories.

- As a part of the World Trade Organization (WTO)'s legal regime, the TRIPS agreement also polices the enforcement of IP rights through a compulsory and enforceable dispute settlement mechanism.

- It is well-known that in the Uruguay Round of negotiations, held from 1986-1994 that led to the formation of the WTO in 1995, the discussions on the TRIPS agreement were contentious.

- Developed countries, especially the United States (US), backed by its pharmaceutical transnational corporations, aggressively pushed for the TRIPS agreement.

- These countries considered that higher cross-border IP protection—which could be effectively monitored through a multilateral agreement—would bring in greater rents for their pharmaceutical corporations.

- On the other hand, developing countries were not keen on an agreement on IP in the WTO. The developed countries won: using both threats of trade sanctions and allurements in the form of concessions in trade in agriculture and textiles, they compelled developing countries to agree to include IP in the Uruguay round of negotiations.

⊙ ANALYSIS

- The concept of intellectual property waiver for Covid-19 vaccines

- The IP waiver might open up space for production of Covid vaccines with emergency use authorisations (EUA) — such as those developed by Pfizer, Moderna, AstraZeneca, Novavax, Johnson & Johnson and Bharat Biotech — on a larger scale in middle-income countries.

- Most production is currently concentrated in high-income countries; production by middle-income countries has been happening through licensing or technology transfer agreements.

- Ramping up production capacities will be a lengthy process — a reason being cited by pharmaceutical companies against the move.

- Most analysts expect this to take at least a few months; it is likely the agreement will be targeted by the WTO's next ministerial conference in end-November

- The US support for an IP waiver stems from a proposal by India and South Africa in the WTO last year. That proposal had, however, called for a waiver on all Covid interventions, including testing diagnostics and novel therapeutics.

- IP waiver proposal should include other interventions going forward. Amid the pandemic, the "widest possible" access to these interventions is limited by production capacity as well as the propensity of high-income countries to acquire "most of the supplies".

- Countries including Canada, South Korea, and Bangladesh have shown interest in making Covid vaccines if they can get a patent waiver.

What are the deterrents for the waiver?

- Pharma companies including Pfizer and AstraZeneca had opposed the proposed waiver — saying eliminating IP protections would "undermine the global response to the pandemic", including the ongoing efforts to tackle new variants.

- It could also create confusion that could potentially undermine public confidence in vaccine safety and create a barrier to information sharing.

- Most importantly, eliminating protections would not speed up production.

- Many Expert have expressed reservations against tweaking IP rules and sharing Covid-19 vaccine technologies.

- The thing that's holding things back, in this case, is not intellectual property. It's not like there's some idle vaccine factory, with regulatory approval, that makes magically safe vaccines.

- Expert's justification for not sharing vaccine tech with developing countries is "that it would not be feasible for a company to move vaccines to a developing nation".

- The argument that these countries do not have the capacity to speedily produce vaccines goes against earlier moves towards a patents regime for generic drugs.

- Experts said the same reasoning can be used now for the production of vaccines. "They will question the capacity and quality.

- But a number of companies from different countries have said they are ready to produce, and quality can always be assessed.

- Between 1972 and 2005, India had adopted process patenting rather than product patenting, and built up a huge generic industry.

Patents and IP Rights

- **A patent** – It represents a powerful intellectual property right, and is an exclusive monopoly granted by a government to an inventor for a limited, pre-specified time.

- It provides an enforceable legal right to prevent others from copying the invention. Patents can be either process patents or product patents.

- **A product patent** – It ensures that the rights to the final product is protected, and anyone other than the patent holder can be restrained from manufacturing it during a specified period, even if they were to use a different process.

- **A process patent** – It enables any person other than the patent holder to manufacture the patented product by modifying certain processes in the manufacturing exercise.

> **Background of India's Patent Right**
>
> - India moved from product patenting to process patenting in the 1970s, which enabled India to become a significant producer of generic drugs at global scale, and allowed companies like Cipla to provide Africa with anti-HIV drugs in the 1990s.
>
> - But due to obligations arising out of the TRIPS Agreement, India had to amend the Patents Act in 2005, and switch to a product patents regime across the pharma, chemicals, and biotech sectors.

Other roadblocks to scaling up production besides patents

- The International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) has pointed to other "real challenges" in scaling up production and distribution of Covid-19 vaccines.

- These include trade barriers, bottlenecks in supply chains, scarcity of raw materials and ingredients in the supply chain, and the unwillingness of rich countries to share doses with poorer nations.

- The scarcity of raw materials has been a growing issue for ramping up production; several manufacturers have been relying on specific suppliers, and alternatives are limited.

- Also, countries like the US had blocked exports of critical raw materials used in the production of some Covid-19 vaccines using regulations like the American Defence Production Act.

- US-backed vaccine patent waiver: pros and cons –

- Patent protection leading to high prices and reduced output as monopolies tend to set prices well above the marginal cost of production to maximise profits.

- Vaccines are priced far more reasonably even

if all countries do not pay the same price for them. So even if companies like Pfizer are making profits, would removing the IP protection increase production and distribution in the developing world.

◉ If IP protection is waived, perhaps some immediate relief in terms of production and distribution could follow if more manufacturers in emerging economies can join in and allocate resources to vaccine production immediately.

◉ If intellectual property protection is waived in the face of a public emergency, even as a one-off, will firms invest next time there is a similar emergency.

◉ **CONCLUSION**

The global community began this year with the singular aim of ending the Covid-19 pandemic. This would only be possible if more and more people all over the world are vaccinated, and as quickly as possible. Given the enormous demand, the production of vaccines has to be increased manifold and followed by ensuring wider and equitable distribution. An IP waiver alone cannot accomplish such task. Increasing the production of vaccines and ensuring their equitable access would also require building the institutional capacity in several countries, overcoming systemic bottlenecks, and undertaking the necessary reforms in the administrative machinery and the legal framework. Nonetheless, a TRIPS waiver could be an important step in scaling up the production of the vaccines..

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RBI'S BID FOR MODERATE BOND YIELD AND ITS SIGNIFICANCE

CONTEXT

The yield on the benchmark 10-year bond has fallen below 6%. The Reserve Bank of India's decision to step up purchase of government securities under the government securities acquisition programme (G-SAP) had been one of the great reasons behind this reduction of yield.

⊙ BACKGROUND

- The change in the yield depends on trends in interest rates which can result in capital gains or losses for investors.

- If an individual holds a bond carrying a yield of 6%, a rise in bond yields in the market will bring the price of the bond down.

- On the other hand, a drop in bond yield below 6% would benefit the investor as the price of the bond will rise, generating capital gains.

> **Bond yield**
>
> - It is the return an investor gets on a **bond** or particular government security purchased.
>
> - B**ond's yield** is based on its **coupon** payments divided by its market price.
>
> - A reciprocal relationship exists between the bond price and the bond yield. As the **bond** prices increase, the **bond yields** fall.

⊙ ANALYSIS

Relation between bond yield and market

- A negative **relationship exists between the bond yields and equity markets.**

- **The higher level of bond yields** enhances the opportunity cost of investing in **equities, which makes the equities less attractive.**

- A decline in bond yield is positive for the equities markets.

G-SAP and the bond yield

- G-SAP has engendered a softening bias in G-sec yields.

- The announcement of a bond-buying programme, the G-SAP has played a crucial role in turning the market sentiment

  > The cancelling and devolving government debt auctions are giving tough signals to the bond yields.

> The fall in bond yields in India could also be due to a sharp decline in US Treasury yields or the economic uncertainty caused by Covid-19.

> **What is Government Securities Acquisition Programme (G-SAP)?**
>
> To maintain RBI's commitment towards the current accommodative policy stance, the RBI launched the Government Securities Acquisition Programme (G-SAP).
>
> - **Support for government borrowing:** The program is being launched to support the ongoing government borrowing.
>
> - **Bond market certainty:** The program will provide certainty to the bond market participation by rein in a sharp increase in G-Sec bond yields.
>
> - **Reason**: **G-SAP aims** towards providing **more comfort to the bond market** by stabilizing it, as The government borrowing expects to enhance the liquidity in the market which could impact the market stability
>
>   > The program **will help in purchasing government securities worth Rs 1 lakh crore** in the first quarter of FY22.
>
> - **Significance:** This would help in **calming the investors' nerves** and would help market participants to bid better in scheduled auctions.
>
>   > It would **reduce volatility in bond prices.**
>
>   > Currently, the 10-year GSec yield is over 6%, the yield on 5-year Gsec is around 5.6% and that on 3-yearGsec is under 5%.
>
> - **RBI's role**: The RBI **will continue with a variable rate reverse repo** to take out excess liquidity.

Impact of reduced yield on markets and investors

- A decline in yield is good for the equity markets because money starts flowing out of debt investments to equity investments. As the bond

yields go down, the equity markets tend to outperform by a bigger margin and as the bond yields go up equity markets tend to down.

- The going up of bond yields show that corporates will have to pay a higher interest cost on debt. As debt servicing costs go up, the risk of bankruptcy and default also increases and this makes mid-cap and highly leveraged companies vulnerable.

- The yield on bonds is normally used as the risk-free rate when calculating the cost of capital. When bond yields go up, the cost of capital goes up.

  ➤ That means that future cash flows get discounted at a higher rate.

  ➤ This compresses the valuations of the stocks.

  ➤ Whenever the interest rates are cut by the RBI, it becomes positive for stocks.

- US monetary policy direction and Fed bond yields could be the biggest risk factors for the Indian bond market in 2021.

Role of RBI in keeping a lower limit

- The RBI has been aiming to keep yields lower as it reduces borrowing costs for the government while preventing any upward movement in lending rates in the market.

- Any rise in bond yields will put pressure on interest rates in the banking system that will lead to a hike in lending rates. RBI wants to keep the interest rates steady to kick-start investments.

◉ CONCLUSION

During the "taper tantrum" episode of 2013, the Indian bond yields spiked and the value of the rupee collapsed within a few months. India's macro position and external accounts are in much better shape than in 2013. Nevertheless, Indian markets will not be immune to any such shocks in the global sphere. Over the medium term, inflation and potential monetary policy normalisation will also play a major role in shaping the interest rate trajectory.

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ETHICS OF AI: BENEFITS AND RISKS OF ARTIFICIAL INTELLIGENCE

CONTEXT

The increasing scale of AI in terms of its size of neural networks, the energy use, size of data sets and its authenticity, and the prevalence of the technology in society is raising the major ethical questions.

⊙ BACKGROUND

- The availability of a vast amount of big data, the speed and stretch of cloud computing platforms, and the advancement of machine learning algorithms have given birth to a good number of innovations in Artificial Intelligence (AI).

- **Benefits:** The beneficial impact of AI systems on government which translates into improving healthcare services, education, and transportation in smart cities. Along with some other applications that benefit from the implementation of AI systems in the public sector which include food supply chain, energy, and the environmental management.

  - The benefits that AI systems bring to society are grand, and same with the challenges and worries.

- The evolving technologies learning give rise to the miscalculations and mistakes, which results in unanticipated harmful impacts.

- This brings the ethical concerns related to the AI.

⊙ ANALYSIS

What is Ethical AI?

- Ethics in AI is essentially questioning, constantly investigating, and not taking for granted the technologies which are being rapidly imposed upon human life.

- **Concern Areas:** The questioning of AI is made all the more urgent because of scale of its use and data.

  - **Sheer Size:** AI systems are reaching tremendous size in terms of the compute power they require, and the data they consume.

  - **Prevalence:** And their prevalence in society, both in the scale of their deployment and the level of responsibility they assume, dwarfs the presence of computing in the PC and Internet eras.

  - **Outreach:** At the same time, increasing scale means several aspects of the technology, especially in its deep learning form that

escape the comprehension of even the most experienced practitioners.

Reasons for ethical concern in the AI field

1. AI ethics: a new urgency and controversy

- Another area of concern is AI applied in the area of military and policing activities.

  - For example, ImageNet has been used to enhance the U.S. military's surveillance systems.

  - With the point of view of safety it is encouraging but with the point of view of unchecked surveillance it is not safe and causes concerns.

2. Mass surveillance backlash

- Calls are rising for mass surveillance, enabled by technology such as facial recognition, not to be used at all.

  - The backlash against surveillance for example the monitoring of ethic Uyghurs in China's Xianxjang region and in February military coup in Myanmar, Human Rights Watch reports that human rights are in the balance given the surveillance system.

- There are fears that the AI tools will be weapons of first resort in future conflicts for the mass surveillance and would reduce the freedom of inidividuals.

3. Ethics of compute efficiency

- The risk of the huge cost of compute for ever-larger models has been a topic of debate for some time now.

- The measures of performance including the energy consumption, are often cloaked in secrecy.

4. AI ethics: a history of racial recognition

- It also demonstrates that how commercially available facial recognition systems had high accuracy while dealing with images of light-skinned men, but catastrophically bad

inaccuracy when dealing with images of darker-skinned women.

➤ Such inaccuracy was tolerated in commercial systems and raised racial questions.

➤ AI in its machine learning form makes extensive use of principles of statistics. In statistics, bias is when an estimation of something turns out not to match the true quantity of that thing.

5. The rise of the fake

➤ The ethical issues of bias are the fact that neural networks are more and more "generative,".

➤ It means they are not merely acting as decision-making tools, such as a classic linear regression machine learning program. They are flooding the world with creations.

- The software can be used to generate realistic faces: It has spawned an era of fake likenesses.

- AI systems can now compose text, audio, and images to a sufficiently high standard that humans have a hard time telling the difference between synthetic and non-synthetic outputs for some constrained applications of the technology.

6. Societal biases

➤ There is the propagation of text that increases the societal biases, as pointed out by the Parrot paper.

- But there are other kinds of biases which can be created by the algorithms that act on that data.

- This includes, for example, algorithms whose goal is to classify human faces into categories of "attractiveness" or "unattractiveness." The so-called generative algorithms, such as GANs. It can be used to endlessly reproduce a narrow formulation of what is purportedly attractive in order to flood the world with that particular aesthetic to the exclusion of all else.

⊙ CONCLUSION

Artificial Intelligence systems implementation and its design must be held accountable. In general the AI might become moral agents with attributed moral responsibility. The engineers and designers of AI systems must assume responsibility and should be held accountable for the creation, design, and the program.

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SECTION: B
(PRELIMS)

CURRENT AFFAIRS

CINCO DE MAYO CELEBRATION

⊙ **CONTEXT:**   **The Cinco de Mayo (May the fifth in Spanish) is a joyous celebration every year in Mexico and the United States.**

⊙ **ABOUT:**   **The Cinco de Mayo**

- **Countries**: It is celebrated every year in Mexico and the United States.

- **Reason**: It is a day that celebrates Mexican national pride, marking Mexico's military victory on its soil over French forces in 1862.

  ◎ In the 1860s, Mexico had been severely weakened by lengthy wars over the previous two decades — the Mexican-American War (1846-48) and the internal Reform War (1858-61).

  ◎ As a result, in 1861, President Benito Juárez announced a temporary moratorium of two years on repaying Mexico's foreign debts.

  ◎ In response, troops from Britain, Spain, and France invaded Mexico, demanding reimbursement. By April 1862, Britain and Spain negotiated with Mexico and withdrew, but France, which at the time was led by Emperor Napoleon III, decided to establish an empire in Mexican territories with the support of the local landowning classes. France also intended to curb US power in North America.

- **Indian Connection**: After this the Benito Jaurez Marg in New Delhi is named and the Embassy of Mexico in India is also located here.

> **The Battle of Puebla**
>
> - In late 1861, a French fleet attacked the Mexican port of Veracruz on the country's eastern coast and landed a large army that drove the Juárez government into retreat.
>
> - As they moved from Veracruz to the capital Mexico City, the French encountered stiff resistance from Mexican forces.
>
> - At Puebla, over 100 km ahead of Mexico City, a poorly equipped and outnumbered Mexican force decisively defeated the advancing French troops on May 5, 1862, killing over a thousand.
>
> - The event marked a significant political victory of Mexican republicans and President Juárez, and helped establish a sense of national unity in the country.

Present-day significance in Mexico and the United States

- In Puebla, Cinco de Mayo is celebrated annually with speeches, parades, and by reenacting episodes of the 1862 battle.

- In the US, in the mid-20th century, the celebration became a way for immigrants from Mexico to express pride in their heritage.

- Cinco de Mayo also became popular with other demographics in the country when the festivities were linked with Mexican alcoholic beverages, such as the margarita.

- As the celebration assumed greater importance in the country, many have criticised the negative stereotypes of Mexicans that were perpetuated as a result, as well as the promotion of excessive drinking.

SUPREME COURT DECLARES MARATHA QUOTA LAW UNCONSTITUTIONAL

◉ **CONTEXT:** A five-judge Constitution Bench of the Supreme Court struck down the Maharashtra law granting reservation to the Maratha community in admissions and government jobs in the state.

◉ **ABOUT:**

The reservation in Maharashtra

- The massive, rallies across the state were organized between 2016-17 and in 2018 again and was centred on reservation for the community in government jobs and educational institutions.

- Sensing the growing aggression amongst the Marathas, a 11-member commission headed by Retired Justice N G Gaikwad on June 2017 was set up.

- The commission submitted a report stating Marathas should be given reservation under Socially and Educationally Backward Class (SEBC).

- Although the commission recommended reservation, it did not specify the quota percentage and left it to state government.

- In November 2018, the Maratha community was given the reservation under the Maharashtra State Socially and Educational Backward Act.

- However, the reservation under SEBC was challenged by a PIL in Bombay High Court. The Bombay High Court while upholding the reservation pointed that instead of 16 per cent it should be reduced to 12 per cent in education and 13 per cent in jobs.

About the Recent Supreme Court Verdict

- The court had framed six questions of law on the issue

Issue 1: On revisiting the Indra Sawhney ruling

- The Maratha quota exceeded the 50% ceiling. The court held that the 50% ceiling, although an arbitrary determination by the court in 1992 (Indira Sawhney's verdict), however is now constitutionally recognised.

Issues 2&3: on the matter of exception

- Since the 50% ceiling is held valid, the court looked into whether the Maratha quota law falls under the exceptional circumstances contemplated by Constitution Bench in Indra Sawhney's case.

- But Marathas are dominant forward class and are in the main stream of National life.

- The above situation is not an extra-ordinary.

Issues 4, 5 & 6: On state's power to identify SEBCs, and 102nd Amendment

- In the task of identification of SEBCs, the President shall be guided by the Commission set up under Article 338B.

- After the insertion of Article 342A in the Constitution, it is the Central government alone which is empowered to identify Socially and Economically Backward Class (SEBC) and include them in a list to be published under Article 342A (1)

- The States can, through their existing mechanisms, or even statutory commissions, only make suggestions to the President or the Commission under Article 338B, for inclusion, exclusion or modification of castes or communities, in the list to be published under Article 342A (1),

- *The use of the term "the Central List" is only to refer to the list prepared and published under Article 342A (1), and no other. It does not imply that the states have any manner of power to publish their list of SEBCs. Once published, under Article 342A (1), the list can only be amended through a law enacted by Parliament, by virtue of Article 342A (2).*

The Constitution (One Hundred and Second Amendment) Act, 2018

- The **Constitution (One Hundred and Second Amendment) Act, 2018** gives constitutional status to the **National Backward Classes Commission**.

- Article 342A was inserted into the Constitution by way of 102ⁿᵈ Constitutional Amendment Act. It reads as follows:

- The President may with respect to any State or Union territory, and where it is a State, after consultation with the Governor thereof, by public notification, specify the socially and educationally backward classes which shall for the purposes of this Constitution be deemed to be socially and educationally backward classes in relation to that State or Union territory, as the case may be.

- Parliament may by law include in or exclude from the Central List of socially and educationally backward classes specified in a notification issued under clause (1) any socially and educationally backward class, but save as aforesaid a notification issued under the said clause shall not be varied by any subsequent notification.

- *By introduction of Articles 366 (26C) and 342A through the 102nd Constitution of India, the President alone, to the exclusion of all other authorities, is empowered to identify SEBCs and include them in a list to be published under Article 342A (1), which shall be deemed to include SEBCs in relation to each state and union territory for the purposes of the Constitution*

THE RED CORALS PASS HEAT STRESS TEST

⊙ **CONTEXT:** In spite of the real threat caused by global warming, corals in the Red Sea look set to keep their vibrant color and to pass the heat test with flying color.

⊙ **ABOUT:** **The Red Coral**

- **It is also known as Precious coral**.

- The common name given to this marine corals is **Corallium**.

- The scientific name given to this is Stylophora pistillata.

- It grows at depths from 10 to 300 meters below sea level.

- It is originally found in Mediterranean Sea.

  ◉ It is also found in Atlantic sites near the Strait of Gibraltar, at the Cape Verde Islands and off the coast of southern Portugal.

  ◉ Other Corallium species are native to the western Pacific, notably around Japan and Taiwan;

Global warming and coral bleaching

- The global warming is pushing ocean temperatures above the limit that the coral can withstand.

- Even under the most optimistic scenarios, most of the coral reef ecosystems on our planet in Australia, the Maldives or the Caribbean are threatened with disappearance.

Coral bleaching

- Coral is single-cell algae that live inside coral tissue for protection and, in exchange, provide corals with essential nutrients produced through photosynthesis.

- Because the algae contain a variety of pigments and therefore give coral reefs their famous colors, if they are lost the corals turn white, which is known as coral bleaching

- The corals in the Gulf of Aqaba, at the northern tip of the Red Sea, were particularly resistant to higher temperatures.

    ◉ those corals, as well as the algae and bacteria they live in symbiosis with, can withstand average temperatures some 5°C higher than what they typically experience

- **Reason behind the survival:** They can withstand with their molecular machinery, which means they're naturally shielded against the temperature increases.

    ◉ They show a rapid gene expression response and recovery pattern when exposed to heat stress.

5G TRIAL AND ITS IMPORTANCE FOR INDIAN TELCOS

◉ **CONTEXT:** **The Department of Telecommunications allowed private telcos Bharti Airtel, Reliance Jio Infocomm and Vi (formerly Vodafone Idea) and well as state-run telco Mahanagar Telephone Nigam Limited (MTNL) to start the trials for 5G technology as well as its applications in various sectors. The trials will last for 6 months for now.**

◉ **ABOUT:** **5G or fifth generation technology**

- 5G or fifth generation is the latest upgrade in the long-term evolution mobile broadband networks.

- 5G mainly works in 3 bands, namely low, mid and high-frequency spectrum.

- All of these 3 bands have uses and limitations.

5 G and its band spectrum potential

Low band spectrum:

➤ The low band spectrum has shown great promise in terms of coverage and speed of internet and data exchange.

➤ Its maximum speed is limited to 100 Mbps (Megabits per second).

➤ The telcos can use and install it for commercial cellphone users who may not have specific demands for very high speed internet.

➤ The low band spectrum may not be optimal for specialised needs of the industry.

Mid-band spectrum:

➤ It offers higher speeds compared to the low band, but has limitations in terms of coverage area and penetration of signals.

➤ Telcos and companies, which have taken the lead on 5G, have indicated that this band may be used by industries and specialised factory units for building captive networks that can be moulded into the needs of that particular industry.

High-band spectrum:

➤ It offers the highest speed of all the three bands, but has extremely limited coverage and signal penetration strength.

➤ Internet speeds in the high-band spectrum of 5G has been tested to be as high as 20 Gbps (giga bits per second), while, in most cases, the maximum internet data speed in 4G has been recorded at 1 Gbps.

Significance of the trials for 5G technology for telecos

- The telecom market in India is left with only three private telcos, with the rest having surrendered to the low returns on investments over the years along with the two state-run companies, MTNL and Bharat Sanchar Nigam Limited (BSNL).

- It is pertinent for telcos to start offering the new 5G technology to increase the average revenue.

- For that, however, they will have to conduct trials in a variety of circumstances, including in semi-urban and rural areas, which remains an untapped market for them.

- It is also important that the government remain also ready to roll out the new technology as soon as possible.

- A standing committee of Lok Sabha on Information Technology has already warned that India could miss the 5G bus.

What will 5G trials in India entail for now?

- In the initial phase, these trials will be for 6 months, including a 2 month period for procurement and setting up of the equipment.

- In these 6 months, telcos will be required to test their set up in urban areas, semi-urban areas as well as rural areas.

- During this period, the telcos will be provided with experimental spectrum in various bands, such as the mid-band of 3.2 GHz to 3.67 GHz, the millimeter wave band of 24.25 GHz to 28.5 GHz, and others.

Where does India stand in the 5G technology race?

- On par with the global players, India had, in 2018, planned to start 5G services as soon as possible, with an aim to capitalise on the better network speeds and strength that the technology promised.

What is the global progress on 5G?

- More than governments, global telecom companies have started building 5G networks and rolling it out to their customers on a trial basis.

FIRST CHINESE VACCINE SINOPHARM GOT APPROVAL BY WHO

⊙ **CONTEXT:** The World Health Organization (WHO) approved the Sinopharm Covid-19 vaccine for emergency use, the first Chinese jab to receive the WHO's green light.

⊙ **ABOUT:** **The Sinopharm Covid-19 vaccine**

- **EUL**: WHO gave emergency use listing (**EUL**) to Sinopharm Beijing's Covid-19 vaccine.

  - **Safer**: It has become the sixth vaccine to receive WHO validation for safety, efficacy and quality.

  - **Additional support**: The Strategic Advisory Group of Experts on Immunisation, or SAGE, has also reviewed the available data, and recommends the vaccine for adults 18 years and older, with a two-dose schedule.

- **Institution:** The Sinopharm vaccine is produced by the Beijing Bio-Institute of Biological Products Co Ltd, which is a subsidiary of China National Biotec Group (CNBG).

  - It is a two-dose vaccine.

  - It is an inactivated vaccine called SARS-CoV-2 Vaccine (Vero Cell).

  - Its easy storage requirements make it highly suitable for low-resource settings.

- **Widespread use:** The Sinopharm vaccine is already in use in 42 territories around the world.

  - It is fourth most used vaccine behind AstraZeneca (166), Pfizer-BioNTech (94) and Moderna (46).

  - Along with China, it is being used in Algeria, Cameroon, Egypt, Hungary, Iraq, Iran, Pakistan, Peru, the United Arab Emirates, Serbia and Seychelles, among others.

How the move is significant?

- **Accessibility:** It opens the door for the jabs to enter in the **Covax global vaccine-sharing scheme.**

  - It aims to provide equitable access to doses around the world and especially in the poorer countries.

- The move would help Beijing to step up its vaccine diplomacy amid the surge in coronavirus vaccines in several countries.

> **Emergency Use Listing (EUL)**
>
> - The EUL assesses the quality, safety and efficacy of COVID-19 vaccines, as well as risk management plans and programmatic suitability, such as cold chain requirements.
>
> - The assessment is performed by the product evaluation group which is composed by regulatory experts from around the world and a Technical Advisory Group (TAG).
>
> - An emergency use listing by the WHO paves the way for countries worldwide to quickly approve and import a vaccine for distribution, especially those states without an international-standard regulator of their own.

Vaccines approved under the EUL for Covid-19

- The WHO has given emergency use listing to the vaccines being made by
  - ➤ Pfizer-BioNTech
  - ➤ Moderna
  - ➤ Johnson and Johnson
  - ➤ AstraZeneca
  - ➤ Sinopharm
  - ➤ Russia's Sputnik V vaccine is also the next furthest ahead in the process

SPACEX'S STARSHIP LANDING BODES WELL FOR NASA'S MOON MISSION

⊙ **CONTEXT:**
Serial number 15 (SN15), a prototype of the futuristic Starship rocket was able to launch and successfully land. It has heralded a new era in space exploration for NASA. Earlier the four previous prototypes of Starship had failed. The SN15 did not run into such problems.

⊙ **ABOUT:**

Serial number 15 (SN15) prototype

- **Privately developed:** It is designed by Elon Musk's company SpaceX, which is the first private company to do so.
- **Reusable:** The spacecraft is considered as a game-changer for space travel, as it is a fully reusable transportation system for crew and cargo to the Earth's orbit, Moon and Mars.
- It is full-scale, stainless steel, bullet-shaped rocketship.
- **Starship's Prototype:** Serial number 15 (SN15) is a prototype of the futuristic Starship rocket.
  - ⊚ Starship is a spacecraft and super-heavy booster rocket.
  - ⊚ tarship has been under development since 2012
  - ⊚ It is a reusable transportation system for crew and cargo to the Earth's orbit, Moon and Mars.
  - ⊚ It has an ability to carry over 100 metric tonnes to the Earth's orbit.

Advantages over other rockets

- **Replacement:** Starship system is expected to replace SpaceX's partially reusable Falcon rockets, which is partially reusable and currently in operation.
- **Reduced cost**: Starship can deliver satellites at lower marginal costs than Falcon vehicles.
  - ⊚ It can ferry both cargo and crew to the International Space Station (ISS).
  - ⊚ As it is reusable, it would reduce the cost of travelling to space by a hundredfold.
- **Large cargo**: Starship is also expected to carry large amounts of cargo to the Moon.
- **Interplanetary:** The spacecraft is being designed for carrying the crew and cargo for interplanetary missions as well.

- **Resistant**: The Starship spacecraft will enter Mars's atmosphere at a speed of 7.5 km per second.
  - **It** will be designed to withstand multiple entries.
- **First to mars:** While no human being has set its foot on Mars yet.
  - SpaceX is planning the first cargo mission to the red planet by 2022 and by 2024.

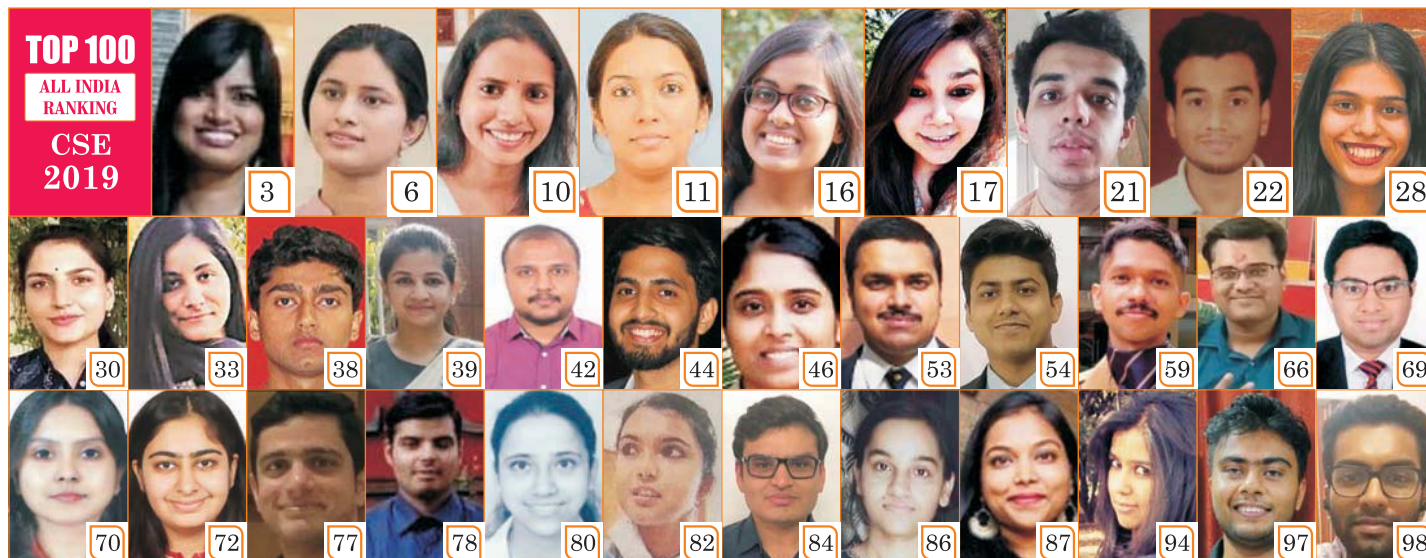## How it is supportive to NASA's Artemis mission?

- **Successful bidder:** SpaceX has been choosen to build a lander for NASA's **Artemis programme**, which plans to send humans to the Moon.
  - SpaceX won it in a bidding war against traditional space giants, Amazon and Dynetics.
  - The present flight success supports it current Artemis bid.

Artemis Program

- The Artemis Program is a NASA's international human spaceflight program.
- It was launched in 2017 to return humans to the Moon, specifically at the lunar south pole region, by 2024.
- It will be the first crewed lunar mission after the Apollo program in 1972.
- NASA aims to demonstrate new technologies, capabilities and business approaches which will ultimately be needed for the future exploration of Mars.

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