

OFFICERS' PULSE

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COVERAGE.

The Hindu

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AT A GLANCE & IN DEPTH.

Polity and Social Issues

Economy

International Relations

Environment

Science and Tech

Culture

CURRENT AFFAIRS WEEKLY
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News @ a glance

POLITY

1) Corporate Social Responsibility

What is CSR?

- Corporate Social Responsibility (CSR) is a business philosophy that dictates that companies around the globe should deviate from the narrow path of chasing only financial gains and wealth buildup and embark on a journey of **sustainable development**.
- It includes community welfare, ethical corporate conduct, climate action, defending the socio-economic rights of marginalised sections of society, among other aspects.

CSR in India

- India harbours one of the earliest and richest traditions of CSR in the world in the form of philanthropy.
- We can find **Chanakya**, also called Kautilya, the cardinal force behind Mauryan Imperialism, commenting and emphasising on the importance of observing ethical practices and principles while conducting commercial activities.
- Our scriptures have also repeatedly echoed the importance of sharing business earnings with the deprived segments of the society.
- In modern India, CSR was attributed with a whole new dimension with the **"Trusteeship Theory" of Mahatma Gandhi**, which considered the businessmen of India as trustees of trusts that looked after public welfare.

Legal Provisions

- **India is the first country** in the world to make CSR **mandatory**, following an amendment to The Company Act, 2013 in 2014.
- Any company that has a **net worth of at least Rs 500 crore, a turnover of Rs 1,000 crore or a net profit of Rs 5 crore** is obliged to spend **2% of its average profits** over the last three years on CSR.

- Businesses can invest their profits in areas such as education, poverty, gender equality, and hunger as part of their CSR compliance, as regulated by the law.

Latest amendments

- Recently, the Ministry of Corporate Affairs amended the rules of CSR.
- As per the new rules, non-compliance to the CSR rules and obligations will **no longer be treated as a criminal offence**. These will now be treated as civil wrongs.
- A company may engage **International Organisations** for designing, monitoring and evaluation of the CSR projects and for capacity building of their own personnel for CSR.
- Any **surplus income** being generated through a company's CSR activities can not form part of the company's profit. The surplus shall be reinvested into the same project or shall be transferred to the Unspent CSR Account.
- Any CSR expenditure that exceeds the required amount can be carried **forward to the next three years**.

Why in News?

- The Government has clarified that spending of CSR funds for creating health infrastructure for COVID care are eligible CSR activities under Companies Act.
- The eligible CSR activities include establishment of medical Oxygen generation and storage plants, manufacturing and supply of Oxygen concentrators, ventilators, cylinders and other medical equipment for countering COVID-19 or or such similar activities.

2) State of Working India 2021

What's in the news?

- Azim Premji University's Centre for Sustainable Employment, Bengaluru, has released a report titled **'State of Working India 2021: One Year of Covid-19'**.

- The report, which covers the period March 2020 to December 2020, dwells on the impact of one year of COVID-19 on employment, incomes, inequality and poverty.

Highlights of the Report

- **Increase in informal employment**
- The COVID-19 pandemic has **substantially increased informality in employment**, leading to a decline in earnings for the majority of workers, and consequent increase in poverty in the country.
- Regarding employment, the report notes that **100 million jobs were lost nationwide** during the April-May 2020 lockdown. Though **most of these workers had found employment by June 2020, about 15 million remained out of work.**
- As for income, for an average household of four members, the monthly per capita income in Oct 2020 (Rs. 4,979) was still below its level in Jan 2020 (Rs. 5,989).
- The study found that post-lockdown, **nearly half of salaried workers had moved into informal work**, either as self-employed (30%), casual wage (10%) or informal salaried (9%).

Fallback options

- The **fallback option varied by caste and religion.** General category workers and Hindus were more likely to move into self-employment while marginalised caste workers and Muslims moved into daily wage work.
- **Education, health and professional services** saw the highest exodus of workers into other sectors, with **agriculture, construction and petty trade** emerging as the top fallback options.
- Due to the employment and income losses, the **labour share of the GDP fell by 5 percentage points**, from 32.5% in the second quarter of 2019-20 to 27% in the second quarter of 2020-21.
- *Labour share of GDP is the total compensation of employees given as a percent of GDP, which is a measure of total output. It provides information about the relative share of output which is paid as compensation to employees as compared with the share paid to capital in the production process for a given reference period.*

- Of the decline in income, 90% was due to reduction in earnings, while 10% was due to loss of employment. This means that even though most workers were able to go back to work, they had to **settle for lower earnings.**
- Monthly earnings of workers fell on an average by 17% during the pandemic, with self-employed and informal salaried workers facing the highest loss of earnings.

Vulnerable sections

- **Women and younger workers** were more affected by the pandemic-related measures. During the lockdown and in the post-lockdown months, 61% of working men remained employed while 7% lost their job and did not return to work. But in the case of women, only 19% remained employed while 47% suffered a permanent job loss.
- With 230 million falling below the national minimum wage threshold of Rs. 375 per day during the pandemic, **poverty rate has increased by 15 percentage points in rural and nearly 20 percentage points in urban areas.**
- Households coped with the loss of income by **decreasing their food intake, selling assets and borrowing informally from friends, relatives and money-lenders.** The report notes that 20% of those surveyed said that their food intake had not improved even six months after the lockdown.

Recommendations

- These findings are a serious cause for concern in the absence of an inclusive social welfare architecture.
- Among other ameliorative policy measures, the report calls for **extending free rations** under the Public Distribution System till the end of 2021, **expansion of MGNREGA entitlement to 150 days**, and a **“Covid hardship allowance”** for the 2.5 million Anganwadi and ASHA workers.

3) Security deposits in elections

What's in the news?

- Election results for West Bengal, Assam, Tamil Nadu, Kerala and Puducherry assemblies were declared recently. Many of the candidates contested lost their security deposits.

What is losing deposit in elections?

- According to the **Representation of People Act, 1951**, it is mandatory for every candidate contesting a Parliamentary or Assembly election to deposit a certain security amount.
- To contest a Parliamentary election, the amount is **Rs 25,000** and in case of an Assembly election, it is **Rs 10,000**.
- This amount is deposited with the Election Commission and is called a security deposit in the election. The deposit amount is mandated to ensure **only serious candidates file nomination to contest elections**.
- The Election Commission of India takes many steps to conduct free and fair parliamentary and assembly elections in

the country. So the deposit of a security amount is one of them.

- Now, **if the candidate gets fewer than one-sixth of the total number of valid votes cast** in the constituency, his **security deposit will be lost**. This means that the candidate who had deposited Rs 25,000 or Rs 10,000 or any other amount would not be refunded by the Election Commission of India.
- In the first Lok Sabha elections in 1951-52, almost 40 per cent of the total candidates lost their deposits. Nearly 86 per cent of the candidates contesting Lok Sabha elections in 2019 lost deposits, according to a report released by the Election Commission of India.

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ENVIRONMENT

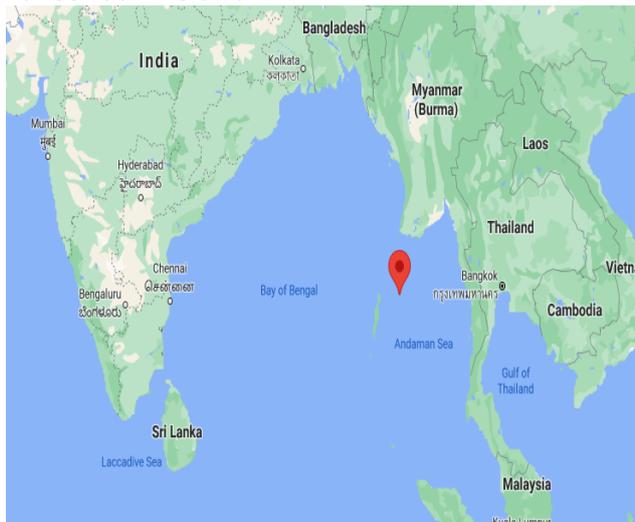
1) New species of shrew discovered in Andamans' Narcondam Island

What are shrews?



- Shrews are small and mouse-like mammals, and they live in sub-leaf stratum in the forests.
- They are **insectivorous** mammals having a **mobile snout** that is covered with long sensitive whiskers and overhangs the lower lip.
- Their large incisor teeth are used like forceps to grab prey. Shrews have a foul odour caused by scent glands on the flanks (between the ribs and the hip) as well as other parts of the body.

Narcondam Island



- Narcondam Island is a 6.8 km² oceanic island of **volcanic origin** located about 240 km northeast of Port Blair in the **Andaman Islands**, in the Bay of Bengal.

- Here we find **endemic Narcondam Hornbill** which is found only in Narcondam.

Why in the news?



- The **Zoological Survey of India (ZSI)** has discovered a new species of insectivorous mammal, a **white-toothed shrew**, from **Narcondam Island** of the Andaman and Nicobar Islands.
- With this discovery the number of mammals found in the country have increased from 429 to 430. Total number of shrews in India has increased to 12.

3) New species of Bryophyte in Kerala

What are Bryophytes?



- The word bryophyte is the collective term for mosses, hornworts and liverworts and bryology is the study of bryophytes.
- They are spore-producing, rather than seed-producing, plants and **they are all without flowers**.
- Bryophytes can be found in great variety throughout the year in areas ranging from

arid to rainforest, and in habitat from sea-level to alpine.

- They have root-like anchoring structures, called **rhizoids** (click for photo, but these (unlike the roots of most plants) do not actively extract minerals and water from the substrate).
- Bryophytes produce spores, rather than seeds.
- Bryophytes play significant roles in the ecosystem. They **arrange the suitable microclimate in the forest ecosystem, and provide suitable microhabitats for many other organisms, especially small insects.**

Why in the news?



- A new species of **moss** of the genus Bryocrumia has been named "**Bryocrumia malabarica**" after the Malabar region of Kerala from where it was spotted.
- Bryocrumia malabarica was discovered in the **Malabar Wildlife Sanctuary** along the Western Ghats.
- Earlier, genus Bryocrumia had only one species *Bryocrumia vivicolor* and was thought to be a **monotypic** (genus represented by just one species). But the latest species discovery has given a new breakthrough.
- *B. malabarica* differs from Bryocrumia vivicolor in the structure of its leaves and has light green colour leaves.

4) Ghost forests, an indicator of climate change

Why in the news?

- Scientists have documented the link between the ghost forests and sea-level rising.

- Let us understand both the terms in detail and know their relation.

What is sea level rise?

- Sea-level rise is an increase in the level of the world's oceans due to the effects of global warming.
- This happens for two reasons.
- **Due to thermal expansion:** As the seas are observing more carbon emission into them, the temperature of the sea increases thus the sea-level rises.
- **Due to melting of glaciers and ice-caps:** As the global temperatures increase, more glaciers melt and thus this melted water joins the oceans through rivers. Hence there is rise in the sea-levels.
- A study projected that in a low-emission scenario, sea level will rise 30 cm by 2050 and 69 cm by 2100. In a high-emission scenario, it will be 34 cm by 2050 and 111 cm by 2100.
- The rise in sea-level accelerates the shoreline erosion and becomes a threat to coastal communities by flooding which costs loss of life & survival.

What are ghost forests?

- Whenever there is sea-level rise, the saltwater of the sea seeps into freshwater areas and forests along the coastline. The forests along the coastline die soon due to salt-intolerance and the soil becomes unworthy of growing any trees further.
- Such a land along the coastline is known as Ghost forest. (figure below).



- They are immediate consequences of sea-level rise.
- 10% of vegetation along the coast of North Carolina (a US state along the Atlantic coast) has been converted to ghost forests.
- Scientists also note that extreme weather events, fuelled by climate change, are causing further damage to vegetation in the form of heavy storms, more frequent

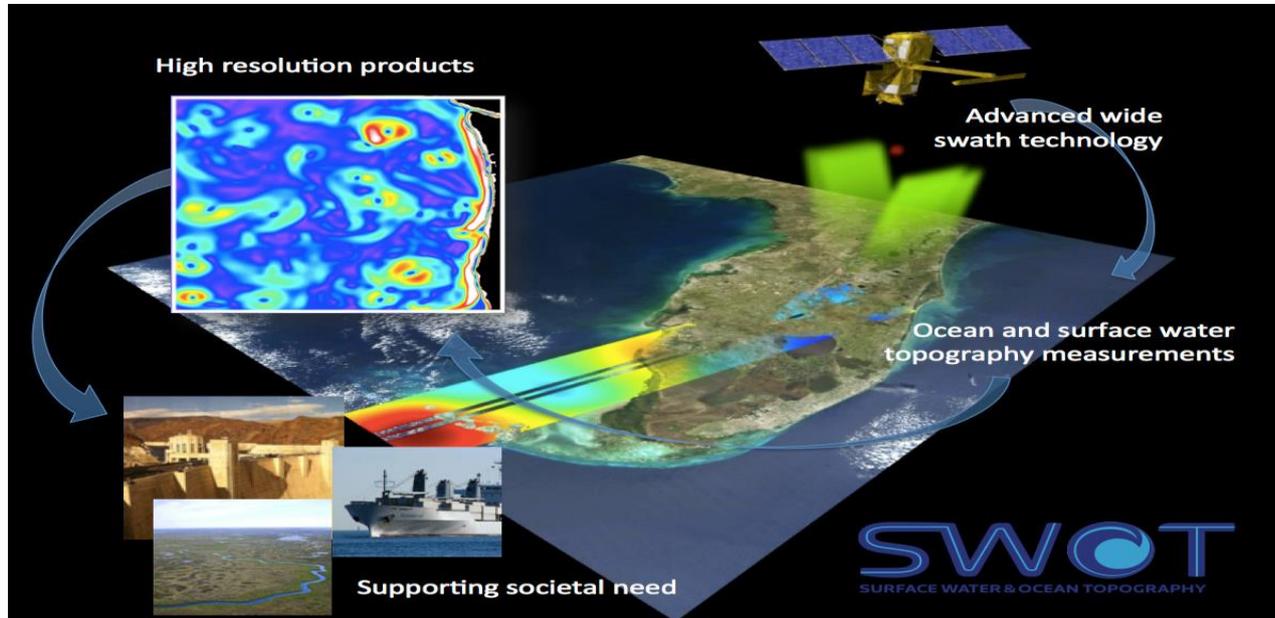
hurricanes and drought. This is causing mass tree die-offs across coastal regions.

- Hence scientists are calling on the governments to observe impacts such as ghost forests as repercussions of climate change and respond to global

environmental coalitions to slow down climate change.

5) Surface Water and Ocean Topography (SWOT) mission

About SWOT



- SWOT is being jointly developed by **NASA and Centre National d'Etudes Spatial (CNES)** (French Space Centre).
- This satellite's mission is to make the **first global survey of Earth's surface water**, observe the fine details of the ocean's surface topography, and measure how water bodies change over time.
- It will be placed in **Low earth orbit** and will revolve around the earth to provide observations of changing water levels, slopes, and inundation extents in rivers, lakes, and floodplains.
- It will also give inputs on changes in ocean currents more accurately than existing satellites.

Why in the news?

- NASA recently announced that SWOT satellite will be launched in 2022.

6) Methane and Climate Change

About Methane

- Methane (CH₄) is the simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms.
- It is produced by **both natural process and human activities**. Major natural sources of methane include **emissions**

from wetlands and oceans, and from the digestive processes of termites.

- Methane is emitted during the **production and transport of coal, natural gas, and oil**. Methane emissions also result from **livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills**.
- Globally, 50-65 percent of total CH₄ emissions come from human activities.
- Although the concentration of methane in Earth's atmosphere is small (around 1.8 parts per million), it is an important greenhouse gas because it is such a **potent heat absorber**.
- Methane's lifetime in the atmosphere is **much shorter** than carbon dioxide (CO₂), but CH₄ is **more efficient at trapping radiation** than CO₂ (almost 25 times more potent than CO₂).
- Methane contributes to the formation of **ground-level ozone**, a dangerous air pollutant.

Why in the news?

- Recently *GLOBAL METHANE ASSESSMENT* has been published by the Climate and Clean Air Coalition and the United Nations Environment Programme.

- **Some of the key points of the report are:**
- More than half of global methane emissions stem from human activities in three sectors: **fossil fuels** (35 percent of human-caused emissions), **waste** (20 percent) and **agriculture** (40 per cent).
- It has asked the countries to reduce human-caused methane emissions by 45% by 2030. This is a cost-effective step required to achieve the United Nations

Framework Convention on Climate Change (UNFCCC) 1.5° C target.

- It has recommended different targets and areas for different countries. For India it has recommended to reduce methane emissions in the **waste sector**. The waste sector could cut its methane emissions by improving the disposal of sewage.
- Focused strategies specifically targeting methane need to be implemented to achieve sufficient methane mitigation.

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ECONOMY

1) Rating agencies

What is a Rating Agency?

- A rating agency is a company that **assesses the financial strength of companies and government entities**, especially their ability to meet principal and interest payments on their debts.
- The rating shows an agency's level of confidence that the borrower will honor its debt obligations as agreed. Each agency uses unique letter-based scores to indicate if a debt has a low or high default risk and the financial stability of its issuer.
- The debt issuers may be sovereign nations, local and state governments, special purpose institutions, companies, or non-profit organizations.

How ratings affect the market?

- At the corporate level, companies planning to issue a security must find a rating agency to rate their debt. Rating agencies such as Moody's, S&P Global Ratings, and Fitch perform the rating service for a fee. **Investors rely on the ratings to decide on whether to buy or not to buy a company's securities.**
- At the country level, investors rely on the ratings given by the credit rating agencies to make **investment decisions**. Many countries sell their securities in the international market, and a good credit rating can help them access high-value investors. A favorable rating may also **attract other forms of investments** like foreign direct investments to a country.
- A rating downgrade means that bonds issued by the governments are now "riskier" than before. Lower risk is better because it allows governments and companies of that country to **raise debts at a lower rate of interest.**

Why in News?

- S&P Global Ratings, a rating agency, has said that India's sovereign rating will remain unchanged at the current level of **BBB** (*which means the country has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity*

to meet its financial commitments)- for the next two years despite the potential adverse impact of surging pandemic on its economy.

- However, the country would witness a slightly faster pace of growth in the next couple of years, effectively supporting the sovereign rating.

2) Anti-dumping duties

What is dumping?

- Dumping is the practice of selling a product in a foreign market at an **unfairly low price** (a price that is lower than the cost in the home market, or which is lower than the cost of production) in order **to gain a competitive advantage over other suppliers.**
- Dumping is done to gain access to the foreign market and eliminate competition. It creates a **monopoly** in the market.
- Dumping enables consumers in the importing country to obtain access to goods at an **affordable price**. However, it can also destroy the local market of the importing country, which can result in layoffs and the closure of businesses.

Anti-dumping duty

- An anti-dumping duty is a protectionist tariff that a **domestic government imposes on foreign imports** when it believes that the goods are being "dumped" – through the low pricing – in the domestic market.
- Anti-dumping duty is imposed **to protect local businesses and markets** from unfair competition by foreign imports.

Ill effects of such duties

- While the intention of anti-dumping duties is to save domestic jobs, these tariffs can also lead to **higher prices for domestic consumers.**
- In the long-term, anti-dumping duties can **reduce the international competition of domestic companies** producing similar goods.

Dumping and WTO

- The **World Trade Organization (WTO)** plays a critical role in the regulation of anti-dumping measures.

- The **WTO Anti-Dumping Agreement** allows the government of the affected country to take legal action against the dumping country as long as there is **evidence of genuine material injury to industries in the domestic market**.
- The government must show that dumping took place, the extent of the dumping in terms of costs, and the injury or threat to cause injury to the domestic market.
- In other cases, the WTO intervenes to prevent anti-dumping measures.

What's in the News?

- The government has extended anti-dumping duty on certain types of seamless tubes, and pipes till October 31 this year with a view to guarding domestic manufacturers from cheap Chinese imports.

- The duty was first imposed in May 2016 for five years.
- The commerce ministry's investigation arm **Directorate General of Trade Remedies (DGTR)** had recommended for extension of the duty, after concluding a probe.
- While DGTR recommends the duty to be levied, the **Ministry of Finance** imposes it.
- Countries initiate anti-dumping probes to determine if the domestic industry has been hurt by a surge in below-cost imports. As a counter-measure, they impose duties under the multilateral WTO regime.
- India has initiated maximum anti-dumping cases against dumped imports from **China**.

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INTERNATIONAL RELATIONS

1) UNHRC

About

- The Office of the United Nations High Commissioner for Refugees (UNHRC) was established in 1950 by the **United Nations General Assembly**.
- The agency is mandated to lead and coordinate international action to protect refugees and resolve refugee problems worldwide. Its primary purpose is to **safeguard the rights and well-being of refugees**.
- It strives to ensure that everyone can exercise the right to seek asylum and find safe refuge in another State, with the option to return home voluntarily, integrate locally or to resettle in a third country. It also has a mandate to help stateless people.

Legal Provisions

- The **1951 Convention relating to the Status of Refugees** (commonly known as the **Refugee Convention**) and its **1967 Protocol** are the key legal documents that form the basis of UNHCR's work.
- With **149 State parties** to either or both, they define the term 'refugee' and outline the rights of refugees, as well as the legal obligations of States to protect them.
- The core principle is **non-refoulement**, which asserts that a refugee should not be returned to a country where they face serious threats to their life or freedom. This is now considered a rule of customary international law.
- **UNHCR serves as the 'guardian' of the 1951 Convention and its 1967 Protocol.**
- **India** has not been a signatory of the 1951 Refugee Convention or the 1967 Protocol.

Why in News?

- The High Court of Manipur has allowed seven Myanmar nationals, who entered India secretly following the February military coup, to travel to New Delhi to seek protection from the United Nations High Commissioner for Refugees.
- Though **India is not a party to the UN Refugee Conventions**, the court observed that the country is a party to the **Universal Declaration of Human Rights of 1948**

and the **International Covenant on Civil and Political Rights of 1966**.

- The court also noted that the far-reaching and myriad protection afforded by **Article 21** of our Constitution, as interpreted and adumbrated by our Supreme Court time and again, would indubitably encompass the **right of non-refoulement**.

Universal Declaration of Human Rights, 1948

- The Universal Declaration of Human Rights is a historic document which outlined the rights and freedoms everyone is entitled to. It was the **first international agreement** on the basic principles of human rights.
- The Declaration was proclaimed by the **United Nations General Assembly** in Paris in 1948 as a common standard of achievements for all people and all nations.
- It sets out fundamental human rights to be universally protected. The UDHR is widely recognized as having inspired, and paved the way for, the adoption of more than seventy human rights treaties, applied today on a permanent basis at global and regional levels.
- Nearly every state in the world has accepted the Declaration (including **India**).

About ICCPR

- The International Covenant on Civil and Political Rights (ICCPR) is a multilateral treaty adopted by the **United Nations General Assembly** in 1966, and it came into force in 1976.
- The ICCPR, together with the Universal Declaration of Human Rights and the International Covenant on Economic Social and Cultural Rights, are considered the **International Bill of Human Rights**.
- The covenant commits its parties to respect the civil and political rights of individuals, including the right to life, freedom of religion, freedom of speech, freedom of assembly, electoral rights and rights to due process and a fair trial.
- At present, the Covenant has 173 parties (including **India**).

2) OPEC

About OPEC arrangement

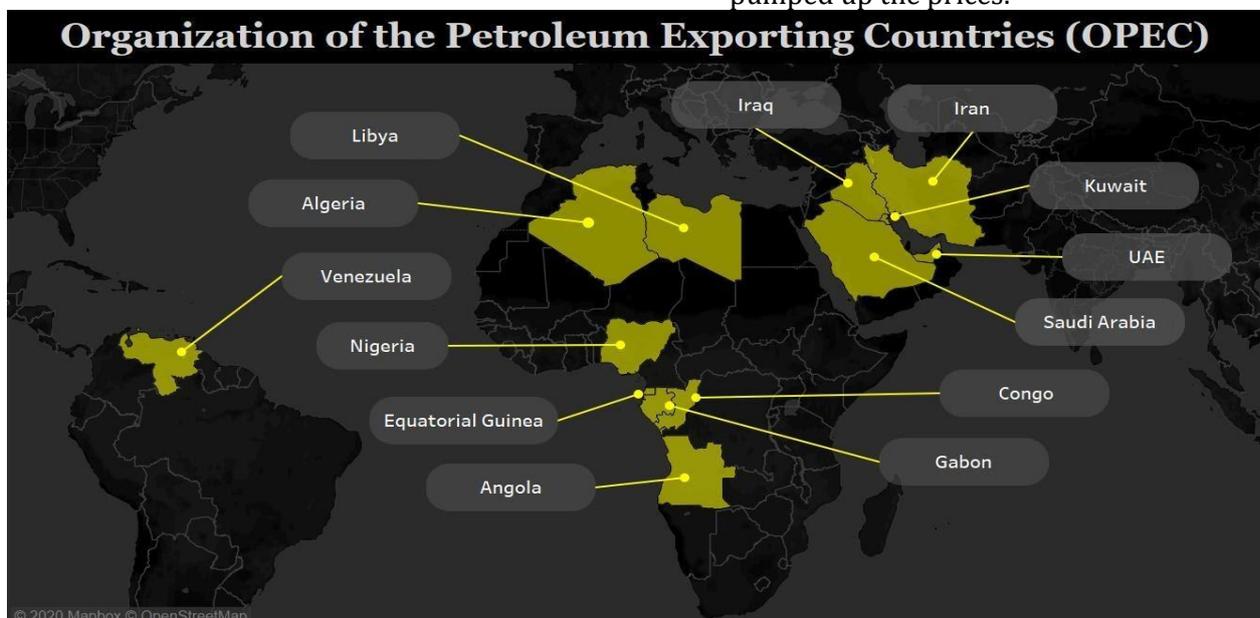
- The Organization of the Petroleum Exporting Countries (OPEC) is a group consisting of **13 of the world's major oil-exporting nations**.
- Countries that belong to OPEC include **Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela** (the five founders), plus the **United Arab Emirates, Libya, Algeria, Nigeria, Angola, Congo, Equatorial Guinea and Gabon**.
- **Note:** Ecuador and Qatar terminated their membership of OPEC recently.
- OPEC was founded in 1960 to coordinate the petroleum policies of its members and

to provide member states with technical and economic aid.

- OPEC is used to work as a cartel and fix prices in a favourable band. It could bring down prices by increasing oil production and raise prices by cutting production.

OPEC Plus

- The 2014 oil crisis, which was accentuated by oversupply of crude, brought down prices below \$30 a barrel. Since then, OPEC has been working with **non-OPEC countries** like Russia, Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Sudan and South Sudan to fix the global prices and supply.
- Known as the **"OPEC Plus" arrangement**, this alliance kept production lower and pumped up the prices.



Why in News?

- OPEC's share of India's oil imports fell to the lowest in at least two decades in the year to the end of March as overall purchases by India fell to a six-year low.
- Total crude imports by India, which is the **world's third-biggest oil importer**, fell to 3.97 million barrels per day (bpd) in FY21, down 11.8% from a year earlier.
- India bought **more U.S. and Canadian oil** at the expense of that from Africa and West Asia, reducing purchases from members of OPEC to about 2.86 million bpd and **reducing the group's share of**

imports to 72% from about 80% previously. That is the lowest share since at least FY02, before which crude import data is not available.

- U.S. and Canadian oil accounted for about 7% and 1.3% respectively of India's imports compared to 4.5% and 0.60% a year earlier.
- The U.S. emerged as the fifth-biggest supplier, up two places from FY20.

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SCIENCE AND TECHNOLOGY

1) Sauropods Fossil

Why in News?

- **Researchers** have identified **fossil** bone fragments of long-necked dinosaurs called **sauropods**, dating back to about **100-million-years** from an area around **West Khasi Hills District in Meghalaya**.

About the discovery

- Sauropods had very **long necks**, long **tails**, small heads relative to the rest of their body, and four thick, pillar-like legs. They are notable for the **enormous sizes** attained by some species, and the group includes the largest animals to have ever lived on land.
- The finding makes **Meghalaya the fifth state in India** after Gujarat, Madhya Pradesh, Maharashtra, and Tamil Nadu and the only state in the North-East to report Sauropod bones having titanosaurian affinity.

Dinosaurs in India

- Dinosaurs in India existed from the late **Triassic period till the Cretaceous period**.
- The **Rajasaurus dinosaur originated in India**.
- Of all the dinosaurs found in India, **Barapasaurus** was the **biggest in India**.

2) A shift in Earth's axis

Why in News?

- A recent study has noted that due to the **significant melting of glaciers** because of global temperature rise, our **planet's axis of rotation** has been **moving more than usual** since the 1990s.

Cause for this shift

- According to NASA, data **from the 20th century** shows that the **spin axis drifted about 10 centimetres per year**. Meaning over a century, polar motion exceeds 10 metres.
- The **possible causes** are **terrestrial water storage** change in non-glacial regions due to **climate change and**

unsustainable consumption of groundwater for irrigation and other anthropogenic activities.

- Generally, **polar motion is caused by changes** in the **hydrosphere, atmosphere, oceans, or solid Earth**. But **now, climate change** is adding to the degree with which the poles wander.
- **While ice melting** is the **major factor** behind increased polar motion, **groundwater depletion also adds to the phenomenon**. As millions of tonnes of water from below the land is pumped out every year for drinking, industries or agriculture, most of it eventually joins the sea, thus redistributing the planet's mass.

What the new study says?

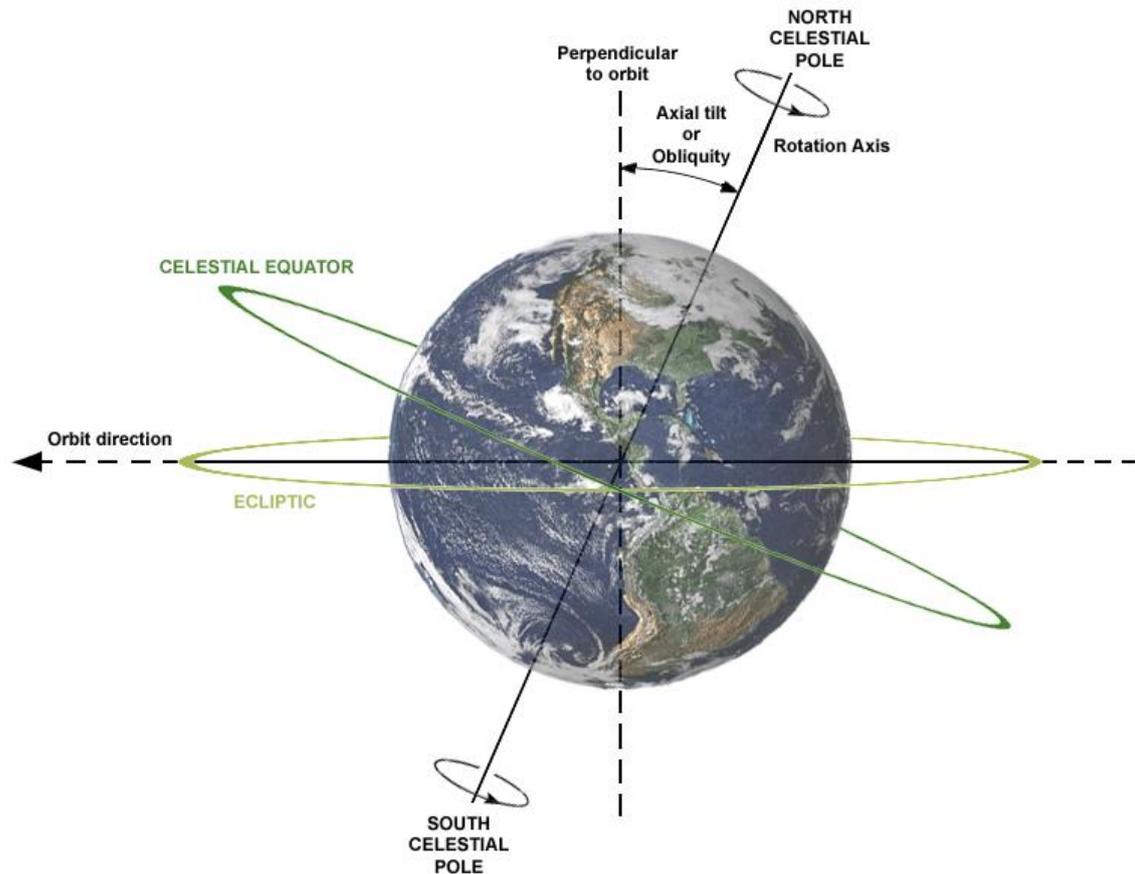
- **Since the 1990s, climate change** has **caused billions of tonnes of glacial ice to melt** into oceans. This has **caused the Earth's poles to move** in new directions.
- As per the study, the north pole has shifted in a new eastward direction since the 1990s, because of changes in the hydrosphere (meaning the way in which water is stored on Earth). From 1995 to 2020, the **average speed of drift was 17 times** faster than from 1981 to 1995. Also, in the last four decades, the poles moved by about 4 metres in distance.
- The **calculations** were based on satellite data **from NASA's Gravity Recovery and Climate Experiment (GRACE) mission** as well as estimates of glacier loss and groundwater pumping going back to the 1980s.
- The **faster ice melting** under global warming was the most **likely cause** of the **directional change** of the polar drift in the 1990s.

What is the effect of this shift?

- While this change is not expected to affect daily life, it **can change the length of the day** by a few milliseconds.

Related information

What is the Earth's Axis



- Earth's Axis is the **line along which it spins around itself** as it revolves around the Sun.
- Earth's axial **tilt** (also known as the **obliquity of the ecliptic**) is about 23.5 degrees.
- **Due to this axial tilt**, the sun shines on different latitudes at different angles throughout the year. And this is why we have **different seasons**. The points on which the axis intersects the planet's surface are the geographical north and south poles.
- **Hypoxia** is a **condition** in which the body or a region of the body is **deprived of adequate oxygen supply** at the tissue level.
- Hypoxia may be classified as either generalized, affecting the whole body, or local, affecting a region of the body.
- The normal oxygen saturation in the bloodstream of a healthy person is above 95%, but COVID-19 patients display dangerous declines of as less as 40%. When **levels fall below 90%**, patients could begin **experiencing lethargy, confusion or mental disruptions** because of insufficient quantities of oxygen reaching the brain. Levels below 80% can result in damage to vital organs.

Are these poles fixed?

- The **axis moves** due to **changes in how the Earth's mass is distributed** around the planet and **hence the location of poles** is not **fixed**. Thus, the poles move when the axis moves, and this movement is called "**polar motion**".

3) Happy Hypoxia

Why in News?

- Medical practitioners have reported a condition called silent or happy hypoxia in the ongoing Covid pandemic

What is Hypoxia?

What is happy hypoxia?

- **Low oxygen saturation** in the blood **without any visible manifestation of distress** is called **happy hypoxia**.
- While **hypoxia** is a **warning signal** for imminent failure of vital body organs like the kidneys, brain, heart and is usually accompanied by prominent breathlessness, **happy hypoxia does not prompt** any such **obvious external signs**

- A medical device called a **pulse oximeter** can be used in the early detection of silent hypoxia.

Related information

Oxygen concentrator

- An **oxygen concentrator** takes in **air** and **separates** the **oxygen** and delivers it into a person via a nasal cannula.
- Air is 79% nitrogen and 21% oxygen and a concentrator that works by plugging into a source of electricity delivers air that is upto 95% oxygen.
- In **respiratory infections** that causes oxygen saturation levels to dip below 90%,

having an **external device supply pure oxygen eases** the **burden** on the **lungs**.

- **However** in cases of **severe respiratory distress**, it may be **necessary** to provide oxygen that is almost **99% pure** and an oxygen concentrator is not up to that job.
- A concentrator consists of a compressor and sieve bed filter. The former squeezes atmospheric air and also adjusts the pressure at which is delivered.
- A sieve bed in the concentrator is made of a material called **Zeolite**. It separates the nitrogen.

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DEFENCE

1) P-8I patrol aircraft to India

Why in News?

- The U.S. State Department approved the proposed sale of six P-8I patrol aircraft and related equipment to India.

What are P-8I patrol aircraft?



- P-8 is a long-range, multimission **maritime patrol aircraft** offered by Boeing. **The P-8I** aircraft is a **variant of the P-8A** Poseidon multimission maritime aircraft (MMA) operated by the US Navy.

- The P-8 is designed to conduct **long-range anti-submarine warfare, anti-surface warfare, and intelligence, surveillance, maritime patrol and reconnaissance** missions.
- It has a bomb bay that **can drop sonobuoys and torpedoes**, as well as hard points on its wings for anti-ship missiles.
- The Indian navy has also used the aircraft to conduct **search and rescue missions**, including dropping survival kit and inflatable life raft from the jet.

Significance

- **India's position** between the **Arabian Sea, Indian Ocean and Bay of Bengal** makes it a **strategically** important player in tracking the movements of submarines and ships, in particular those of China.
- The country also sits alongside **vital shipping lanes** between the Middle East and East Asia.

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ART & CULTURE

1) Putola Nach

- **What's in the news?**
- The COVID-19 pandemic has provided an **Assam**-based trust the opportunity to focus on a near-forgotten form of **string puppetry**, the **Putola Nach**.
- The art form was used to take the messages related to COVID-19 to the public through social media videos.
- The videos were produced in collaboration with UNICEF. The names of the videos were **COVID Shatru** (enemy), **COVID Bibharat** (confusion).

About the art



- Usually, **Putola Nach** is used to perform scenes from the epics such as **Ramayana** or **Mahabharatha**. It is a traditional string puppet theatre from **Assam**.
- Dolls are 1.5 metres tall and are made of hollow wood or bamboo. The heads are made of terracotta.
- Musical Instruments are used in performing the art.

Puppetry in India

- **Oldest written reference to puppetry** has been found at **Tamil classic**

Silappadikaaram written around 1st and 2nd Century BC.

- The excavation sites at **Harappa and Mohenjodaro** have yielded puppets with sockets attached to them which suggest the presence of puppetry as an art form.

Types of Puppetry in India

Glove Puppets-

- The puppets are worn on the hand of the puppeteers like gloves.
- Pavakkoothu – Kerala

String Puppets-

- Strings are attached to small holes in the hands, head and back of the body which are then controlled by the puppeteer.
- Gopalila Kundhei – Orissa
- Bommalattam – Tamil Nadu
- Kalasutri Bahulya – Maharashtra
- Putola Nach – Assam
- Kathputli – Rajasthan
- Gombeyatta – Karnataka

Shadow Puppets-

- Puppets are placed on a white screen with light falling from behind to create a shadow effect on the screen.
- Thol Bommalattam – Tamil Nadu
- Togalu Gombeyata – Karnataka
- Chamadyache Bahulya – Maharashtra
- Tholpavakoothu – Kerala
- Ravanachhaya – Orissa
- Tholu Bommalata – Andhra Pradesh

Rod Puppets

- Kathi Kandhe – Orissa
- Putul Nach – West Bengal
- Yampuri – Bihar

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PIB ANALYSIS

1) Asiatic Lions

About:

- Asiatic lions are slightly smaller than African lions. They have shorter manes (hair around their face) than African counterparts.
- Asiatic lions were once distributed upto the state of West Bengal in east and Rewa in Madhya Pradesh, in central India.
- At present **Gir National Park and Wildlife Sanctuary, Gujarat**, is the only abode of the Asiatic lion.

Protection for Asiatic Lions

Protection Status:

- IUCN Red List: Endangered
- CITES: Appendix I
- Wildlife (Protection) Act 1972: Schedule I

Conservation Efforts

- The “Asiatic Lion Conservation Project” has been launched by the Union Ministry of Environment, Forests and Climate Change (MoEFCC).
- It is the Centrally Sponsored Scheme with the cost sharing of 60:40 by the Centre and the State Govt.
- As a result of these conservation efforts, the population of Asiatic lions, which used to be around 50 by the late 1890s, increased to 674 in 2020.

Why in the news?

- Eight Asiatic lions at Hyderabad’s Nehru Zoological Park have tested positive for the deadly Coronavirus.

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News in Depth

AIR NEWS

1) Kisan Credit Card scheme

About the Scheme

- The Kisan Credit Card (KCC) scheme was introduced in **1998** with the aim of providing **adequate and timely credit support** from the banking system under a single window with flexible and simplified procedure to the farmers for their cultivation and other needs as indicated below:
 - To meet the short term credit requirements for cultivation of crops;
 - Post-harvest expenses;
 - Produce marketing loan;
 - Consumption requirements of farmer household;
 - Working capital for maintenance of farm assets and activities allied to agriculture;
 - Investment credit requirement for agriculture and allied activities.
- **Note:** The aggregate of components 'a' to 'e' above will form the **short term credit limit portion** and the aggregate of components under 'f' will form the **long term credit limit portion**.
- Under the KCC Scheme, a flexible limit of Rs.10,000 to Rs.50,000 has been provided

to marginal farmers (as Flexi KCC) based on the land holding and crops grown.

- The beneficiaries under the scheme will be issued with a **Smart card/ Debit card**.
- It enables farmers to purchase agricultural inputs such as seeds, fertilizers, pesticides, etc. and draw cash to satisfy their agricultural and consumption needs.
- The Scheme is implemented by **Commercial Banks, RRBs, Small Finance Banks and Cooperatives**.

Eligibility

- Farmers - individual/joint borrowers who are owner cultivators;
- Tenant farmers, oral lessees & sharecroppers;
- Self Help Groups (SHGs) or Joint Liability Groups (JLGs) of farmers including tenant farmers, sharecroppers etc.
- In 2019, KCC was extended to **farmers who are involved in activities related to animal husbandry and fisheries**.

Why in News?

- The Ministry of Agriculture and Farmers' Welfare is conducting a special drive to cover farmers under the Kisan Credit Card scheme.

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THE HINDU EDITORIALS

1) A 'One Health' approach that targets people, animals

GS-2 Health; GS-3 Science & Technology

NEWS

- The battle against COVID-19 should also be used as an opportunity to meet India's 'One Health' targets.

CONTEXT

- In 1856, the father of modern pathology, Rudolf Virchow, emphasised that **there are essentially no dividing lines between animal and human medicine.**
- In the present times, when the world is grappling with the COVID-19 pandemic, this concept has become ever more salient.
- Hence, the discussions that took place around World Veterinary Day, on April 24, 2021, focused on acknowledging the **interconnectedness of animals, humans, and the environment, an approach referred to as "One Health".**

ACROSS THE SPECIAL BARRIER

- The transboundary impact of viral outbreaks in recent years such as the Nipah virus, Ebola, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS) and Avian Influenza has further reinforced the need for us to consistently document the linkages between the environment, animals, and human health.
- Studies indicate that more than **two-thirds of existing and emerging infectious diseases are zoonotic, or can be transferred between animals and humans, and vice versa.**
- Another category of diseases, **"anthropozoonotic" infections,** gets transferred from humans to animals.

INDIA'S FRAMEWORK

- India's **'One Health'** vision derives its blueprint from the agreement between the tripartite-plus alliance comprising the **Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE), the World Health Organization (WHO) and the United Nations Environment Programme (UNEP)** — a global initiative supported by the **United Nations**

Children's Fund (UNICEF) and the World Bank under the overarching goal of contributing to **'One World, One Health'**.

- With long-term objectives, India established a **National Standing Committee on Zoonoses** as far back as the 1980s.
- This year, funds were sanctioned for setting up a **'Centre for One Health'** at Nagpur.
- Further, the **Department of Animal Husbandry and Dairying (DAHD)** has launched several schemes to mitigate the prevalence of animal diseases since 2015. In addition, it will soon establish a 'One Health' unit within the Ministry.
- Also, under the **National Animal Disease Control Programme**, ₹13,343 crore have been sanctioned for Foot and Mouth disease and Brucellosis control.
- The government is working to revamp programmes that focus on capacity building for veterinarians and upgrading the animal health diagnostic system such as **Assistance to States for Control of Animal Diseases (ASCAD).**

NEED FOR COORDINATION

- Scientists have observed that there are more than 1.7 million viruses circulating in wildlife, and many of them are likely to be zoonotic.
- This implies that unless there is timely detection, India risks facing many more pandemics in times to come.
- To achieve targets under the 'One Health' vision, there is a **need to address challenges** related such as:
 1. Veterinary manpower shortages,
 2. The lack of information sharing between human and animal health institutions,
 3. Inadequate coordination on food safety at slaughter, distribution, and retail facilities.
- These issues can be remedied by consolidating existing animal health and disease surveillance systems.
- Hence, there is a need for consolidating existing animal health and disease surveillance systems such as the Information Network for Animal

Productivity and Health and the National Animal Disease Reporting System.

- Best-practice guidelines for informal market and slaughterhouse operation and creating mechanisms to operationalise 'One Health' at every stage down to the village level must be developed.
- Awareness generation and increased investments toward meeting 'One Health' targets is the need of the hour.

2) A COVID blot on India's foreign policy canvas

GS-2 International Relations

NEWS

- A direct consequence of the pandemic is that New Delhi's claim to regional primacy and leadership could take a hit.

CONTEXT

- The second wave of COVID-19 and its distressing consequences has **prompted the country to accept foreign aid after a gap of 17 years.**
- This is bound to have far-reaching strategic implications for India. As a direct consequence of the pandemic, India's 'leading power' aspirations will be dented, and accentuate its domestic political contestations.
- This in turn will impact the content and conduct of India's foreign policy in the years to come.

IMPACT OF COVID ON INDIA'S REGIONAL PRIMACY

- **COVID 2.0 has quickened the demise of India's regional primacy.**
- India's traditional primacy in the region was built on a **mix of material aid, political influence and historical ties.**
- But in present times, its political influence is steadily declining, its ability to materially help the neighbourhood will shrink in the wake of COVID-19.
- Hence, its historical ties alone may not do wonders to hold on to a region hungry for development assistance and political autonomy. As a result, South Asian states are likely to board the Chinese bandwagon.
- COVID-19, therefore, comes at a time when India's standing in the region is already shrinking: the pandemic will only quicken the inevitable.

- While the **Indo-Pacific is geopolitically keen and ready to engage with India**, the pandemic could adversely impact India's ability and desire to contribute to the Indo-Pacific and the Quad.
- For instance, COVID-19 will prevent any ambitious military spending or modernisation plans.
- It will also **limit the country's attention on global diplomacy and regional geopolitics**, be it Afghanistan or Sri Lanka or the Indo-Pacific.
- Thus, with reduced military spending and lesser diplomatic attention to regional geopolitics, New Delhi's ability to project power and contribute to the growth of the Quad will be uncertain.

IMPLICATIONS OF GLOBAL AID

- The outpouring of global aid to India shows that the world realises India is too important to fail.
- But at the same time, the international community might also reach the conclusion that **post-COVID-19 India is too fragile to lead and be a 'leading power'.**
- New Delhi is pivotal to the Indo-Pacific project, but with India's inability to take a lead role and China wooing smaller states in the region away from the Indo-Pacific with aid and threats, the **Indo-Pacific balance of power could eventually turn in Beijing's favour.**

DOMESTIC POLITICS

- **Domestic political contestations in the wake of the COVID-19 devastation in the country could also limit New Delhi's strategic ambitions.**
- General economic distress, a fall in foreign direct investment and industrial production, and a rise in unemployment have already impacted the country.
- The upcoming elections in the country could further fan communal tensions in the country, triggering more political violence.
- **A depressed economy, politically volatile domestic space combined with a lack of elite consensus on strategic matters** would hardly inspire confidence in the international system about India.

FOREIGN POLICY

- The strategic consequences of the pandemic are capable of shaping the

content and conduct of India's foreign policy in several important ways.

India-China equations:

- One potential impact of return of COVID-19 is that it might **force India to be more conciliatory towards China.**
- From competing with China's vaccine diplomacy a few months ago, New Delhi today is forced to seek help from the international community.
- On the contrary, **China has emerged stronger in the wake of the pandemic.**
- Also the world, notwithstanding its anti-China rhetoric, will continue to do business with Beijing.
- Further, **the rise of China and India's COVID-19-related troubles could prompt the U.S to move closer to Beijing.**

Depressed foreign policy:

- Post-COVID-19, with the much **reduced political, India's diplomatic bandwidth for expansive foreign policy goals would be limited.**
- **Less aggression could potentially translate into more accommodation, reconciliation and cooperation** especially in the neighbourhood, with Pakistan on the one hand and within the broader South Asian Association for Regional Cooperation (SAARC) framework on the other.
- Also, the aftermath of the pandemic may force us to **re-imagine, to some extent at least, the friend enemy equations in global geopolitics.**

Strategic autonomy:

- Finally, the pandemic would, at the very least indirectly, **impact India's policy of maintaining strategic autonomy.**
- The strategic consequences of the pandemic are bound to shape and structure New Delhi's foreign policy choices as well as constrain India's foreign policy agency.
- For instance, **New Delhi cannot say 'yes' to just aid and 'no' to criticism,** thus making it harder for India to resist demands of a closer military relationship with the U.S.

WAYFORWARD

- **Every crisis opens up the possibility for change and new thinking.**

- Similarly, **COVID-19 will also open up new regional opportunities for cooperation especially under the ambit of SAARC.**
- India might do well to get the region's collective focus on 'regional health multilateralism' to promote mutual assistance and joint action on health emergencies such as this.
- Classical geopolitics should be brought on a par with health diplomacy, environmental concerns and regional connectivity in South Asia. COVID-19 has opened such an opportunity to the world's least integrated region.

3) An issue of lives versus livelihoods

GS-1 Population and Associated Issues; GS-2 Government Policies & Interventions, Welfare Schemes; GS-3 Employment

NEWS

- That the situations faced by India's migrants are not a matter of concern in policy making is quite apparent.

CONTEXT

- With the continuation of the second wave of the pandemic, strict to moderate lockdowns are being imposed again.
- This has led to the termination of jobs in many establishments employing large numbers of informal workers.
- Of those employed in the informal category, large numbers include migrants who face a **bleak future, with job losses, loss of rented accommodations, a lack of sustainable income and savings to ensure food, transportation back to villages or any other emergency including falling victim to COVI-19.**

DILEMMA FOR MIGRANTS

- Given their bitter experiences last year, migrants have already begun their journeys back to villages, paying exorbitant sums for their travel.
- On the contrary, even villages do not provide bright prospects for them.
- Instead it was the state of rural distress in the first place which pushed them to seek a better future in the urban areas.
- Adding on to their woes, the **allotments under National Rural Employment**

Guarantee Act have been shrunk by the government.

CONCERNS

- With multiple issues of serious sufferings on account of COVID-19- related distress, the country has less time to discuss the fate of migrants.
- That the **situations faced by migrants are not a matter of concern in policy making** is quite apparent.
- There has been **no attempt to have an official estimate of such flows, either incoming or reverse.**
- No visible measures are taken to redress the miseries that await the returning migrants. The recent official announcement of **free ration of 5 kg cereals to 80 crore families is the only sop visible so far.**

QUESTIONS FOR THE STATE

- The presence of the rural migrants benefited the urban economy by providing cheap labour to manufacturing units and cheap services to households.
- However, these jobs provided did not entail further obligations on the part of the employers or the state, given that the 'footloose' migrants never had any legal status as a working population.
- Hence, if the measure of using lockdowns and curfews to save lives, simultaneously take away the means of livelihood for the rootless and roofless migrants, it would have been more fair to provide for some short-term relief for these workers and their families.

NO LABOUR SAFEGUARDS

- Pieces of legislation, as available, do not provide any evidence of addressing the issue especially in the current crisis.
- The **Contract Labour (Regulation and Abolition) Act 1970** conferred on casual labour a legal status by providing a mechanism for registration of contractors engaging 20 or more workers.
- While it was never effective, **the Occupational Safety, Health and Working Conditions Code, 2020 has replaced all such Acts.**
- Seeking to **regulate the health and safety conditions of workers in establishments with 10 or more workers, the Code has replaced 13 prevailing labour laws.**

CONCLUSION

- There is an urgent need to contemplate on the question- **Can we justify the situation as a step to save lives when it does not work for large sections of migrant people who also experience a loss of their livelihoods at the same time?**
- The present situation demands administrative oversight and execution of laws and policies that could provide basic safeguards to migrant workers before sending them off to a bleak future.

4) **Maratha quota unconstitutional, violates right to equality, says SC**

CONTEXT

- A five-judge Constitution Bench of the Supreme Court unanimously declared a Maharashtra law, which provides reservation benefits to the Maratha community taking the quota limit in the State in excess of 50%, as unconstitutional.

SETS ASIDE HC VERDICT

- The Supreme Court set aside the **Bombay High Court judgment which validated the Maharashtra State Reservation for Socially and Educationally Backward Classes (SEBC) Act of 2018.**
- The High Court, in June 2019, reduced the quantum of reservation for Marathas from the 16% recommended by the Gaikwad Commission to 12% in education and 13% in employment.
- But the **Supreme Court concluded that even the reduced percentages were ultra vires.**

FINDINGS OF THE SUPREME COURT

- The Bench of SC, found **there was no "exceptional circumstances" or "extraordinary situation" in Maharashtra**, which required the State government to break the 50% ceiling limit to bestow quota benefits on the Maratha community.
- The judges noted that the **Marathas are in the mainstream of national life and are a politically dominant caste.**
- In addition to it, the Supreme Court held that a separate reservation for the Maratha community **violated Articles 14 (right to equality) and 21 (due process of law).**

SC ON INDRA SAWHNEY JUDGMENT

- The top court **declined to revisit its 1992 Indra Sawhney judgment**, which fixed the reservation limit at 50%.
- The Bench agreed that- “the ceiling of 50% with the ‘extraordinary circumstances’ exception, is the just balance — what is termed as the **‘Goldilocks solution’** i.e. the solution containing the right balance that allows the State sufficient latitude to ensure meaningful affirmative action to those who deserve it and at the same time ensures that the essential content of equality”.

IMPLICATIONS OF THE JUDGMENT

- The Court’s categorical refusal to reconsider the 50% limit set down by a verdict in Indra Sawhney (1992) may threaten the continuance of different kinds of reservation in States.
- The **Bench unanimously upheld the constitutional validity of the 102nd Constitution Amendment, by which a National Commission for Backward Classes was created.**
- This may impact the rights of States, as the Court has ruled that, **there will only be a single list of socially and educationally backward classes with respect to each State and Union Territory notified by the President of India.**
- The **states can only make recommendations for inclusion or exclusion**, with any subsequent change to be made only by Parliament.
- The Court has now ruled that **only Parliament can create a scheme to identify SEBCs** in the same manner as SCs and STs, while the **President alone is now empowered to identify SEBCs.**

5) The fig leaf of patent protection has to drop

GS-3 Intellectual Property Rights

NEWS

- The U.S.-supported patent waiver in the COVID fight has the potential to bring in much-needed global health equity.

CONTEXT

- India-South Africa had placed the proposal before the World Trade Organisation (WTO), seeking a waiver of patent protection for technologies needed to combat and contain COVID-19.

- Following which the proposal had been facing resistance from several high income countries including the U.S. administration.
- But, the United States has now backed the initiative. This decision of the U.S. comes as a shot in the arm for global health.

IMPLICATION OF U.S. BACKING

- The backing of the proposal could act as a catalyst for building consensus in favour of that proposal when it comes up for fresh consideration at the WTO in June.
- However, the path ahead is yet not clear. While **France and Russia have declared support, Germany has voiced its opposition.**

PREDICTABLE RESPONSES

- Response to the proposal was divided during earlier debates at the WTO.
- While many low and middle income countries supported it, **resistance came from the U.S., the United Kingdom, the European Union, Switzerland, Australia and Japan.**
- A strange addition to this group was **Norway**, which usually supports initiatives that promote global health equity.
- Since the WTO operates on consensus rather than by voting, the proposal did not advance despite drawing support of over 60 countries.
- Also, the **pharmaceutical industry** fiercely opposed it and vigorously lobbied many governments.
- Even, the **Microsoft co-founder and billionaire Bill Gates** was strident in his opposition to patent waivers for vaccines.

REASONS OFFERED FOR SUCH OPPOSITION

- It was argued that the **capacity for producing vaccines of assured quality and safety was limited to some laboratories** and that it would be **hazardous to permit manufacturers in low and middle income countries** to play with technologies they cannot handle.
- On the contrary to this defence, these pharmaceutical manufacturers have no reservations about contracting industries in those countries to manufacture their patent-protected vaccines for the global market. This shows they don’t mind as long as their patents and profits are protected.
- Patent waivers are also dismissed as useless on the grounds that the **time**

taken for their utilisation by new firms will be too long to help combat the present pandemic.

- Also an argument put forth by multinational pharmaceutical firms is that a **breach in the patent barricade will allow China to steal their technologies**, now and in the future. Instead the original genomic sequence was openly shared by China, which gave these firms a head start in developing vaccines.
- Another argument, offered for defending patent protection, is that **innovation and investment by industry need to be financially rewarded to incentivise them** to develop new products. But even if compulsory licences are issued bypassing patent restrictions, royalties are paid to the original innovators and patent holders. They will continue to gain revenue, though not super profits.

CONCERNS

- The counter to patent waiver is an offer to license manufacturers in developing countries, while retaining patent rights. This **restricts the opportunity for production to a chosen few**.
- The terms of those agreements are opaque and offer no assurance of equity in access to the products at affordable prices, either to the country of manufacture or to other developing countries.
- It was also stated that developing countries could be supplied vaccines through the COVAX facility, set up by several international agencies and donors.
- While well intended, it has fallen far short of promised delivery. Some U.S. States

have received more vaccines than the entire Africa has from COVAX. The **trickle down theory does not work well in the global vaccine supply**.

- Manufacturers from many countries like **Canada and South Korea, expressed their readiness to produce the approved vaccines**, are not being allowed to enter a restricted circle.

WHAT NEEDS TO BE DONE?

- The World Trade Organization resolves debates by consensus and not by voting. The process may drag on, despite U.S. intervention. Therefore, **developing countries must start issuing compulsory licences**.
- Also, the **Doha declaration on TRIPS flexibilities permits** their use in a public health emergency.
- National governments must be trusted to promote credible companies and not permit fly-by-night operators.
- **Efficacy and safety of the products can be assessed** by credible regulatory agencies and the World Health Organization.
- High-income countries and multilateral agencies should provide **financial and technical support to enable expansion** of global production capacity. That will reflect both ennobling altruism and enlightened self-interest.

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INDIAN EXPRESS EXPLAINED

1) What is a 5G trial, and why is it important for Indian telcos?

Importance of 5G Technology

- 5G or fifth generation is the latest upgrade in the long-term evolution (LTE) mobile broadband networks.
- 5G uses a new digital technology called **Massive MIMO**, which stands for **multiple input multiple output**, that uses multiple targeted beams to spotlight and follow users around a cell site, improving coverage, speed and capacity.
- The three major benefits offered by 5G are **higher speeds, higher bandwidth and lower latency**.

Speed

- Speed is one of the most highly anticipated elements of the 5G network which is **expected to be nearly 100 times faster than 4G**.
- Such high speeds are possible because most 5G networks are to be built on **super-high-frequency airwaves**, also known as **high-band spectrum**.
- The **higher frequencies can transmit much more data**, much faster than on 4G.

Capacity

- The 5G network is expected to have significantly more capacity than 4G.
- This is because 5G will have **greater bandwidth**, meaning it **can handle many more connected devices** than previous networks.
- It will bring in an "**internet of things**" era, filled with connected toothbrushes, kitchen appliances, street lamps and more.

Latency

- Latency is the time it takes for devices to communicate with each other or with the server that's sending them information.
- Latency is already low with 4G, but 5G will make it **virtually zero**.
- It will be essential for technologies such as **self-driving cars** which require instant communication of huge data to ensure safety of its passengers.

How is latency different from speed?

- A small but significant difference exists between speed and latency.

- Speed is the amount of time it takes to download the contents of a webpage.
- Latency is the time between when a text is sent to another phone and when that receiver's phone registers that it has received a new message.

Are there any drawbacks?

- The **high-band network signals don't travel very far** and struggle to move through hard surfaces.
- In order to compensate for those challenges, wireless carriers building high-band 5G networks are installing tons of small cell sites (about the size of pizza boxes) to light poles, walls or towers, often in relatively small proximity to one another. For that reason, most carriers are deploying 5G city by city.
- Significant adoption of 5G is going to take years — industry trade group GSMA estimates that by 2025, around half of mobile connections will be 5G (the rest will be older tech, like 4G and 3G).
- There are also concerns among regulators and others about the **security** of 5G, especially since crucial technologies such as self-driving cars and healthcare systems will be built on top of the network.

		3G	4G	5G
	Deployment	2004-05	2006-10	2020
	Bandwidth	2mbps	200mbps	>1gbps
	Latency	100-500 milliseconds	20-30 milliseconds	<10 milliseconds
	Average Speed	144 kbps	25 mbps	200-400 mbps

Why in the News?

- The Department of Telecommunications has 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 trials for 5G technology as well as its applications in various sectors.

Why are the trials for 5G technology important for telcos?

- 5G is the latest upgrade in the long-term evolution of mobile broadband networks. 5G mainly works in **3 bands**, namely **low, mid and high-frequency spectrum** — all of which have their uses and limitations.
- In order to increase their average revenue per user, it is pertinent for telcos to start offering the new 5G technology as soon as possible.

What will 5G trials in India entail for now?

- For the six months 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.
- While the **low band spectrum** has shown great promise in terms of coverage and

speed of internet and data exchange, the maximum speed is limited to 100 Mbps (Megabits per second).

- The **mid-band spectrum**, on the other hand, offers higher speeds compared to the low band, but has limitations in terms of coverage area and penetration of signals.
- The **high-band spectrum** 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 have been tested to be as high as 20 Gbps (gigabits per second), while, in most cases, the maximum internet data speed in 4G has been recorded at 1 Gbps.

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