UPSC Daily Current Affairs | Prelim Bits 10-06-2021

Mixing Covid-19 Vaccines

- India plans to embark soon on an exercise to investigate if it can immunise people using a “mix and match” of different Covid-19 vaccines.
- This would mean following up one dose of a particular vaccine with a second dose of a different vaccine.
- In scientific terms, this is called “heterologous” immunisation.
- Mixing and Matching Covid-19 vaccines of different technologies could better our immune response and may provide wider protection against certain mutations or variants of the SARS-CoV-2 virus.
- This may solve the problem with shortages in supply of a vaccine. It allows the completion of immunization while ensuring safety from side effects from one vaccine.

Genetically Modified Crops

- Genetically Modified (GM) crops involve the editing of genes of a crop in such a way that it incorporates beneficial traits from another crop or organism.
- This changes the way the plant grows, or makes it resistant to a particular disease. More than 10% of the world’s crop land grows GM crops. Food produced using the edited crop is called GM food.
- **Procedure** - The new gene or the transgene that is produced from the donor organism is transferred into the recipient cells using the tools of genetic engineering.
- The cells are then grown in tissue culture where they develop into plants.
- The seeds produced by these plants will inherit the new DNA structure.
- **Advantages** - GM crops are perceived to offer benefits to both producers (mostly, farmers) and consumers.
- Genetic engineering can improve crop protection (Crops with better resistance to pest and diseases can be created). The use of herbicides and pesticides can be reduced or even eliminated.
- Crops can be engineered to withstand extreme weather, improve nutritional content and extend the shelf life of foods.

Keeling Curve

- The amount of carbon in Earth's atmosphere in May 2021 reached its highest level in modern history, a global indicator showed.
- The Keeling Curve, named after its creator Dr. Charles David Keeling, is a global benchmark for carbon levels in the atmosphere.
- It is a graph that represents the concentration of carbon dioxide (CO2) in Earth's atmosphere since 1958 at the Mauna Loa Observatory in Hawaii.
- It is the longest uninterrupted instrumental record of atmospheric CO2 in the world, and it is commonly regarded as one of the best and most recognizable products of a long-term scientific study.
- It is considered by many scientists to be a trustworthy measure of CO2 in the middle layers of the troposphere.
- At Mauna Loa Observatory, Keeling discovered global atmospheric CO2 levels were rising nearly every year. By analyzing the CO2 in his samples, he was able to attribute this rise to the use of fossil fuels.

Keeling's Discoveries

- Keeling found that the air samples taken at night contained a higher concentration of CO2 compared to samples taken during the day.
- He drew on his understanding of photosynthesis and plant respiration to explain this observation:
    1. During the day, plants take in CO2 to photosynthesize, and
    2. At night, the plants release CO
- By studying his measurements over the course of a few years, Keeling also noticed a larger seasonal pattern.
    1. CO2 levels are highest in the spring, when decomposing plant matter releases CO2 into the air, and
    2. CO2 levels are lowest in autumn when plants stop taking in CO2 for photosynthesis.

Global Minimum Corporate Tax Rate

- The Group of Seven (G7) Finance Ministers reached a landmark accord setting a global minimum corporate tax rate at 15% (least), an agreement that could form the basis of a worldwide deal.
- [G7 countries - UK, Canada, France, Germany, Italy, Japan and US. All of them are part of G20]
- Corporation tax is a direct tax imposed on the net income or profit that enterprises make from their businesses.
- The Global Minimum Corporate Tax Rate will ensure taxes were paid in the countries where businesses operate. It may apply to overseas profits.
- Governments could still set whatever local corporate tax rate they want, but if companies pay lower rates in a particular country, their home governments

could “top-up” their taxes to the minimum rate.
- This will eliminate the advantage of the companies’ shifting profits and tax revenues to low-tax countries regardless of where their sales are made.

UN Secretary-General

- The United Nations Security Council (UNSC) approved ninth UN Secretary-General António Guterres for a second term for five more years starting January 1, 2022.
- While there are no term limits applicable to this post, no Secretary-General has so far served more than two terms.
- **Selection process** - The Secretary-General is appointed by the UN General Assembly (UNGA) on the recommendation of the UNSC.
- The five permanent members of the 15-nation-strong UNSC are the most powerful players in the process of selection of Secretary-General, as any one of them can eliminate a candidature by a veto.
- [Five permanent members of the UNSC - China, France, Russia, the United Kingdom, and the United States.]
- The 10 elected non-permanent members of the UNSC, of which India is currently a part, do not have veto powers.
- But their backing is still crucial as a candidate requires at least nine out of 15 votes to be recommended for the top job.

Functions and Powers of the UN Secretary-General

- The UN Charter refers to the UN Secretary-General as the “chief administrative officer” of the United Nations.
- The UN Secretary-General shall act in that capacity and perform such other functions as are entrusted to them by the UNSC, UNGA, Economic and Social Council (ECOSOC) and other UN organs.
- S/he is “equal parts diplomat and advocate, civil servant and CEO,” and a symbol of UN ideals and a spokesperson for the interests of the world’s peoples, in particular the poor and vulnerable among them.
- The Secretary-General’s day-to-day work includes
    1. Attendance at sessions of United Nations bodies;
    2. Consultations with world leaders, government officials, and others;
    3. Worldwide travel intended to keep the Secretary-General in touch with the peoples of the UN member states.

Sardar Sarovar Narmada Dam

- In the ongoing summer, the Sardar Sarovar Narmada dam released about 1.3 Million Acre Feet (MAF) water for irrigation between April 1 and May 31 in

its command area of 21.29 lakh hectares.

- The Sardar Sarovar Narmada Dam or Sardar Sarovar Project (SSP) is a terminal dam and gravity dam built on the Narmada River at Kevadia in Narmada district of Gujarat.
- It is the second biggest dam in terms of volume of concrete used in it. It is the third highest concrete dam in India.
- The Sardar Sarovar Project (SSP) involves a series of large irrigation and hydroelectric multi-purpose dams.
- It took form in 1979 as part of a development scheme to increase irrigation and produce hydroelectricity.
- The SSP includes two powerhouses - River Bed Power House (RBPH; 1,200 MW) and Canal Head Power House (250 MW).
- The power benefits from the project are to be shared thus: Madhya Pradesh at 57%, Maharashtra at 27% and Gujarat at 16%

River Narmada

- River Narmada's water is shared amongst four party states - Gujarat, Rajasthan, Madhya Pradesh and Maharashtra - in the ratio stipulated by the 1979 award of the Narmada Water Dispute Tribunal.
- Out of the 28 MAF capacity of Narmada basin, Gujarat has been awarded a share of 9 MAF, while Madhya Pradesh has 18.25 MAF, Rajasthan 0.50 MAF, and Maharashtra 0.25 MAF.
- Called the 'lifeline of Gujarat', River Narmada usually has no water for irrigation during summers.
- However, in the ongoing summer, the Sardar Sarovar Narmada dam released 1.3 MAF water for irrigation between April 1 and May 31.
- **FRL** - The Sardar Sarovar Dam attained its full height in 2017, but it could not be filled up to the Full Reservoir Level (FRL) of 138.68 meters in 2017 and 2018 due to monsoon deficit.
- However, good rainfall in the catchment in 2019 and 2020 ensured that it achieved FRL for two consecutive years said the Sardar Sarovar Narmada Nigam Ltd (SSNNL).

Source: PIB, The Hindu, The Indian Express, National Geographic

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