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COVID and Destruction of Forests

- The destruction of forests that encourages climate change also encourages the emergence of diseases like the novel coronavirus disease (COVID-19), indigenous leaders, who recently met in New York, said.
- According to research loss of habitat has brought wild animals into closer contact with humans and domesticated animals, enabling diseases such as the coronavirus to jump the animal-human barrier and spread through human-to-human contact.
- It is likely that an animal (is responsible for a virus that) has infected tens of thousands of people worldwide with coronavirus and placed a strain on the global economy.
- If only the world (had) worked to strengthen the rights of indigenous peoples, learned to live in nature with biodiversity and protect animal and plant species would see fewer epidemics. The leaders also stressed that protecting indigenous rights and forests could help the world find medicines to treat the coronavirus and potential future pandemics.
- 25 per cent of the medicines (the world) uses come out of the forests and that by losing the forests, future solutions are put in danger, and traditional knowledge needs to be recognized.
- The leaders also criticized Cargill Corp and other multinational companies for replacing forests with soy, palm and cattle plantations.
- According to recent research, protecting the land and human rights of indigenous peoples who occupy much of the earth's forested areas was the best way to keep forests standing, which in turn reduced global warming and biodiversity loss.
- In 2019, the United Nations' Intergovernmental Panel on Climate Change called protection of land and human rights for Indigenous Peoples "vital" to tackling the climate crisis.

IBM's Summit and COVID-19

- As coronavirus pandemic continues with infections continuing to rise across the world, including in India, scientists are still searching for a cure to the COVID-19.

- IBM’s supercomputer Summit, the world’s most powerful one, has also been utilized in search for drugs that might be most effective against the virus.
- US Department of Energy’s Oak Ridge National Laboratory (ORNL) have used IBM Summit to explore a possible cure for the virus.
- The Summit has already identified 77 small-molecule drug compounds, which could help in the fight against the SARS-CoV-2 coronavirus that is responsible for the pandemic.
- However, given the exact structure of the virus is still not clear, scientists do caution that they will need more research and experiments to verify and confirm which chemicals will be able to fight the virus.

Saranda and Chaibasa Iron Ore Reserves

- Saranda and Chaibasa — in Jharkhand’s West Singhbhum district had large iron ore reserves.
- Management Plan for Sustainable Mining (MPSM), which regulates mining in Chaibasa and the Saranda Sal forest area.
- The Saranda forest the biggest Sal forest in Asia was once a hotbed of leftwing extremism.

Management Plan for Sustainable Mining (MPSM)

- After evidence of illegal mining in Saranda and Chaibasa in Singhbhum district, Jharkhand’ was found by the Shah Commission in 2014, the need to draw up a plan for sustainable mining was felt, this led to the formulation of the MPSM.
- The conservation zone is a repository to huge iron ore resources and so state government insisted that the stipulation in the MSPM report for complete ban on mining in conservation zone should be revisited.
- The union ministry accepted the state’s request on July 11, 2019 and asked the Indian Council of Forestry Research and Education (ICFRE) to conduct a study to reassess or modify MPSM.
- The committee to reassess the ban was formed soon after the chief secretary wrote to the ministry to open up the conservation zone for mining.
- ICFRE recommended conducting the study over a period of three seasons.
- The Jharkhand Mines and Geology Department, however, sought an early completion of the study, according to the minutes.

- The committee also proposed for the following to be included in the MPSM:

1. Establishment of iron ore beneficiation plant
2. A legal proposal for declaration of MPSM-designated Conservation Zones as Conservation Areas
3. Guidelines for use of District Mineral Fund (DMF) and Corporate Social Responsibility (CSR) funds for the benefits of affected people
4. Institutional mechanism for monitoring and evaluation of mining and rehabilitation activities at central and stat government level
5. Carrying out comprehensive zonation of mineral bearing areas and preparation of master plan for mineralized zone for systematic mining as amendment /modification in MPSM

- The committee also finalized its terms of reference and sent it to MoEFCC for final approval.
- The terms of reference include an evaluation of iron ore and its economic value in Saranda forest, a study of International cases of mining in biodiversity-rich areas and a mapping of elephant corridors.
- Mining as a source of employment for the local population and revenue to the state, were also added to the committee's terms.
- It also recommended a re-digitization exercise of the forest areas — especially in mineralized zones — and a verification of boundaries by the Jharkhand government.

Indian Council of Forestry Research and Education

- The Indian Council of Forestry Research and Education (ICFRE) is an autonomous organization or governmental agency under the Ministry of Environment and Forests.
- It is headquartered in Dehradun.
- Its functions are to conduct

1. Forestry research.
2. Transfer the technologies developed to the states of India and other user agencies.
3. To impart forestry education.

- The council has 9 research institutes and 4 advanced centers to cater to the research needs of different bio-geographical regions.
- These are located at Dehradun, Shimla, Ranchi, Jorhat, Jabalpur, Jodhpur, Bangalore, Coimbatore, Allahabad, Chhindwara, Aizawl, Hyderabad and Agartala.

Enzyme SPRK1

- A person's genome is inherited from the parents — during fertilisation, half of the father's genome is mixed with half of the mother's.
- A sperm carries half as much genetic material as a regular cell and needs to be folded and packaged in a way that it fits in the egg.
- While the information was well-known, what led the first step in the process wasn't.
- It is the enzyme SPRK1 that makes way for this first step by reorganizing paternal genome during the first moments of fertilization.
- The enzyme does it in a matter of few hours, according to scientists.
- According a study, the paternal genome undergoes an exchange of proteins histone with protamine for compaction into sperm.
- Upon fertilization, this process is reversed, which is how parental genome is reprogrammed and subsequently activated, SRPK-1 initiates this process.
- The discovery could help study infertility in certain cases.
- Until now, enzyme SPRK1 was studied for its ability to splice ribonucleic acid (RNA), an important step that enables translation of genes to proteins.
- But SRPK1 leads a double life swapping protamine for histones once the sperm meets egg.
- SPRK1 most likely started out playing this role in early embryogenesis, and later evolved the ability to splice RNA.

Bengaluru's Water Conservation Score

- According to Jal Shakti Abhiyan score card Bengaluru is 200th in the country in terms of water conservation, with a score of a mere 11 percentage.
- The city's lakes have often been a part of the news cycle for being polluted enough to literally catch fire sometimes.
- The initiative addresses the water and irrigation needs of 255 water-stressed districts across the country.
- Apart from city rules, Karnataka's 2017 wastewater policy also advocates for interventions similar to those described under JSA and allocates a 20 per cent reuse target.
- None of these, however, was reflected in the Bengaluru district's scorecard that gave it a zero on all fields except for uploading details of five conservation sites.

- There were disagreements between the center and state regarding the criteria and methods of assessment that seem to show in the final scorecard.
- The JSA scorecard, however, seemingly disregards the existence of policy measures that were put in place to improve the city's water security.
- Bengaluru Corporation has 205 lakes under its purview has, however, forged some successful partnerships with citizen groups over the past decade for the maintenance and upkeep of the lakes.

JSA Water score card

- To encourage the States and Districts to focus on Jal Shakti Abhiyan, Department of Drinking Water and Sanitation has launched the District rankings based on the progress achieved during the campaign.
- The ranking would assess the performance of Districts against Five Intervention areas, Special Interventions and People's participation.
- The scoring methodology and detailed weightage against each indicator is mentioned below:

1. District rankings to be calculated for all districts.
2. District level scores to be aggregated based on mean of block scores against five intervention areas.
3. Block level scores will be calculated based on progress reported against five intervention areas.
4. Highest score by any block/district against progress reported under each indicator will be given full marks.
5. All other blocks/districts will get score in proportion of progress made with respect to highest score against that indicator.
6. Special indicators will measure the progress under Special Interventions and People's participation at District level.

Solar Eclipse

- When the Sun, Earth, and the Moon align in a straight line (or form an almost straight configuration), either a solar eclipse or a lunar eclipse is witnessed depending on the position of the Earth.
- A solar eclipse happens during the New Moon when the Moon moves between Earth and the Sun to cast a shadow on the Earth blocking the rays of Sun.
- There are three kinds of solar eclipses Total, partial, and annular along with rare hybrid that is a combination of an annular and a total eclipse.
- There are between two and five solar eclipses every year.

- This year, there will be two solar eclipses one is scheduled for Jun 21 and the other one is expected to occur on December 14.

Lunar Eclipse

- A lunar eclipse happens during a Full Moon when the Earth comes between the Sun and the Moon blocking the Sun’s rays from directly reaching the Moon.
- Just like solar eclipses, lunar eclipses are also of three kinds– total, partial, and penumbral.
- The year 2020 has been listed to hold four lunar eclipses– one of which has been already witnessed in January.
- The remaining eclipses have been scheduled to occur in June, July, and November.
- Also, just like the first lunar eclipse, the upcoming lunar eclipse of the year will be penumbral ones, which means the Moon travels through the faint penumbral portion of Earth’s shadow.

Umbra, Penumbra and Antumbra

- Like any other opaque objects illuminated by a light source, the Moon and the Earth cast shadows into space as they block the sunlight that hits them. Each shadow has 3 different areas: the umbra, the penumbra, and the antumbra.
- **Penumbra -** It is the lighter outer part of a shadow, the Moon's penumbra causes partial solar eclipses, and the Earth's penumbra is involved in penumbral lunar eclipses.
- The penumbra is a half-shadow that occurs when a light source is only partly covered by an object – for example, when the Moon obscures part of the Sun's disk.
- **Umbra -** The shadow's dark center portion.
- **Antumbra -** The lighter part of the shadow that begins where the umbra ends.

Source: Down to Earth, Indian Express



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