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1. Pobitora Wildlife Sanctuary

Why in News?

Recently, two Asiatic Water Buffaloes died in central Assam's Pobitora Wildlife Sanctuary because of coming in contact with Anthrax.

- Anthrax, caused by the bacterium Bacillus anthracis, can infect domestic and wild animals when they breathe in or ingest spores in contaminated soil, plants, or water.
- It can be fatal for humans who come in contact with infected animals.
- It is characterised by blisters around swellings on the skin, chest pain, vomiting, diarrhoea and fever.
- Anthrax is not contagious.

Pobitora Wildlife Sanctuary

- It is situated in the flood plains of River Brahmaputra in Assam, India.
- The natural boundary of the Pobitora Wildlife Sanctuary is the Garanga Beel on the south and the river Brahmaputra on the North, rest of the boundary are artificial and surrounded by 27 villages.
- In 1987, it was declared a Wildlife Sanctuary covering an area of 16 square kilometers.
- In it, there are now around 90 plus Rhinos, a ten per cent increase over the last six years.
- It has the highest concentration of One-horned Rhino in the world and the second highest concentration of Rhino in Assam after Kaziranga National Park.
- Besides rhinoceros, the other mammals found are Leopard, Leopard cat, Fishing cat, Jungle cat, Feral Buffalo, Wild pigs, Chinese pangolins etc.
- It is an important Bird Area altogether 375 species of both migratory and resident birds.

Asiatic Wild Water Buffaloes

- The Wild Buffaloes are found in Assam and Chhattisgarh and occasionally in Meghalaya and Maharashtra.
- It is mostly found in Kaziranga National Park , as per the last count in 430 sq km Kaziranga put the number of Wild Buffaloes at around 1400.
- The animal is protected by the Wildlife (Protection) Act 1972 and listed as Endangered in the IUCN red list.

2. 2019 Ozone Hole Is Smallest On Record

Why in News?

- According to the National Oceanic and Atmospheric Administration (NOAA) and NASA satellite measurements, the ozone hole in 2019 over Antarctica is the smallest observed since 1982.

- This is due to warmer stratospheric temperatures and not a sign that atmospheric ozone is suddenly on a fast track to recovery.

About Ozone Hole

- Ozone (composed of three atoms of oxygen) occurs both in the Earth's upper atmosphere (stratosphere) and at ground level (troposphere).
- It has the potential to absorb around 97-99% of the harmful ultraviolet radiations coming from the sun that can damage life on earth.
- Ozone depletion refers to the phenomenon of reductions in the amount of ozone in the stratosphere.
- Substances causing ozone depletion include:
    - Chlorofluorocarbons (CFCs)
    - Hydrochlorofluorocarbons (HCFCs)
    - Hydrobromofluorocarbons (HBFCs)
    - Halons
    - Methyl Bromide
    - Carbon Tetrachloride
    - Methyl Chloroform
- Consequences of ozone depletion:
    - More ultraviolet radiation (UV) comes to Earth causing damage to living organisms.
    - UV radiation seems responsible for skin cancer in humans.
    - It also lowers production of phytoplankton and thus affects other aquatic organisms.
    - It can also influence the growth of terrestrial plants.

About Antarctic Ozone Hole

- The Antarctic ozone hole forms during the Southern Hemisphere's late winter as the returning Sun's rays start ozone-depleting reactions.
- In warmer temperatures fewer polar stratospheric clouds form and they don't persist as long, limiting the ozone-depletion process.
- This is the third time in the last 40 years that weather systems have caused warm temperatures that limit ozone depletion.
- NASA and NOAA monitor the ozone hole via complementary instrumental methods.

3. SAFAR Air Quality Index

Why in News?

According to System of Air Quality and Weather Forecasting and Research (SAFAR), Delhi is likely to witness a less polluted Diwali in 2019 as “high deterioration” of Air Quality Index is expected only by the first week of November.

About SAFAR

- It was introduced by the Ministry of Earth Sciences (MoES), Government of India, for greater metropolitan cities of India to provide location specific information on air quality in near real time and its forecast 1-3 days in advance for the first time in India.
- The SAFAR observational network of Air Quality Monitoring Stations (AQMS) and Automatic Weather Stations (AWS) operates in 4 cities- Delhi, Pune, Mumbai and Ahmedabad.
- It has been combined with the early warning system on weather parameters.
- This system is developed by Indian Institute of Tropical Meteorology, Pune, along with Earth System Science Organisation (ESSO) partner institutions namely
    - India Meteorological Department (IMD)
    - National Centre for Medium Range Weather Forecasting (NCMRWF).
- It engineers awareness drive by educating the public, prompting self-mitigation and also to help develop mitigation strategies for policy makers.
- Functions:
    - Monitor regular air quality and weather parameters like
        - Particulate Matter (PM2.5, PM10)
        - Sulfur Dioxide
        - Ozone
        - Nitrogen Oxides
        - Carbon Monoxide.
    - Measure the sun's UV-Index (UVI), PM1, Mercury and Black carbon in real time.
    - Provide measurement of online automatic ultrafine particles PM1 and Mercury.
    - Monitor the existence of harmful pollutants: Benzene, Toluene and Xylene.

Air Quality Index (AQI)

- Air Quality Index is a tool for effective communication of air quality status to people in terms of single number (index value), nomenclature and colour.
- There are six AQI categories, namely
    - Good (0-50)
    - Satisfactory (51-100)
    - Moderately polluted (101-200)
    - Poor (201-300)
    - Very Poor (301-400)

- Severe (401-500).

- Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (known as health breakpoints).
- AQ sub-index and health breakpoints are evolved for eight pollutants:
  - Particulate Matter (PM 2.5, PM 10)
  - Sulphur dioxide (SO2)
  - Nitrogen dioxide (NO2)
  - Carbon monoxide (CO)
  - Ozone (O3)
  - Ammonia (NH3)
  - Lead (Pb).

4. Artificial Leaf Produces Clean Gas From Sunlight

Why in News?

Scientists from the University of Cambridge have developed an 'artificial leaf' device that uses sunlight to produce syngas currently made from fossil fuels.

- This leaf could be used to create a sustainable liquid fuel alternative to petrol.

Artificial Leaf

- Artificial leaf is a silicon-based device that uses solar energy to split hydrogen and oxygen.
- Artificial Leaf is inspired by photosynthesis.
- On the artificial leaf, two light absorbers, similar to the molecules in plants that harvest sunlight, are combined with a catalyst made from the naturally abundant element cobalt.
- When the device is immersed in water, one light absorber uses the catalyst to produce oxygen.
- The other carries out the chemical reaction that reduces carbon dioxide and water into carbon monoxide and hydrogen, forming the syngas mixture.

Syngas

It is a mixture of carbon monoxide and hydrogen. Since the mixture of the two gases is used for the synthesis of methanol, it is called syngas.

Sources - Sewage, Saw-dust, Scrap wood, Newspapers.

Applications -

Syngas can be used to produce a wide range of fertilizers, fuels, solvent and synthetic materials.

5. NTCA Cautions Madhya Pradesh Government Move To Encroach In Tiger Reserves

Why in News?

The National Tiger Conservation Authority (NTCA) cautioned the Madhya Pradesh government's move to increase tourism activities by building helipads inside the state's tiger reserves.

- These Helipads will lead to noise pollution which will be harmful for the Wild life.
- There are six tiger reserves in Madhya Pradesh — Kanha, Bandhavgarh, Panna, Satpura, Sanjay-Dubri, Pench and Seventh one -Ratapani being approved by centre.

National Tiger Conservation Authority

- It is a statutory body under the Ministry of Environment, Forest and Climate Change.
- It was established in December 2005 following the recommendations of theTiger Task Force.
- It was constituted under Wildlife (Protection) Act, 1972.

6. 36 million Indians Face Flood Risk

Why in News?

In India, 36 million people would face annual flooding by 2050 and 44 million by 2100 if emissions continue to rise unabated.These are the findings of a study done by the scientific journal Nature Communications, using a new software called CoastalDEM.

Key Findings:

- The number of Indians who stand to be affected by rising sea levels may have been underestimated by as much as 88%.
- Nearly 21 million — and not 2.8 million — are expected to be living below the High Tide Line-the boundary that marks the farthest to which the sea reaches into the land at high tide.
- Globally nearly 110 million people live on land below the current high tide lines and 250 million on land below annual flood levels.
- 300 million people globally live on land that will flood at least once a year by 2050 due to sea level rise—three times more than previous projections.
- Roughly 75% of those affected live in six Asian countries: China, India, Vietnam, Thailand, Indonesia, and Bangladesh.

- Climate change has caused global mean sea level to rise by 11-16 cm in the 20th century and is expected to rise by as much as 2 m by the end of this century.
- Sharp reductions in carbon emissions and investment in coastal defense measures are vital to reduce risk the study suggests.
- Flood risk is shaped not only by sea level rise-which in turn depends on factors such as how fast the ice sheets melt-but also the elevation level of the land.
- The increase in sea level in the Indian Ocean is at the rate of 5-6 cm per decade. At this rate, the densely populated low-lying cities like Mumbai and Kolkata are at greater risk.

7. Second Assembly Of International Solar Alliance

Why in News?

- The Ministry of New and Renewable Energy hosted the second Assembly of International Solar Alliance (ISA) on 30-31 October 2019.
- Two countries – Eritrea and St. Kitts and Nevis, signed the framework agreement of ISA. With this 83 countries have signed the ISA framework agreement.

About the ISA Assembly

- The Assembly is the supreme decision making body of the ISA, and gives directions on various administrative, financial and programme related issues.
- Minister for New and Renewable Energy and Power, India is the President of the ISA Assembly and Minister of State for the Ecological and Inclusive Transition, France is the Co-President of the Assembly.

About International Solar Alliance (ISA)

- The ISA is an Indian initiative that was launched by the Prime Minister of India and the President of France on 30 November 2015 in Paris, France.
- It was launched on the side-lines of the UNFCCC COP-21, with 121 solar resource rich countries lying fully or partially between the Tropic of Cancer and Tropic of Capricorn as prospective members.
- The alliance is a treaty based inter-governmental organisation.
- It was official established in 2017 on the entry into force of the Framework agreement.
- Headquarters: Gurugram, India.
- Currently 83 countries of the 121 prospective member countries have signed the Framework Agreement of the ISA.
    - Of these, 58 countries have ratified the same.
- The overarching objective of the ISA is to collectively address key

common challenges to the scaling up of solar energy in ISA member countries.

- It aims to undertake joint efforts required to:
  - Reduce the cost of finance and the cost of technology.
  - Mobilize investments of $1000 billion needed for massive deployment of solar energy by 2030.
  - Pave the way for future technologies adapted to the needs.
- **India's initiatives:**
  - It has allotted 5 acres of land to the ISA in National Institute of Solar Energy (NISE) campus, Gurugram.
  - It also released a sum of Rs. 160 crore for creating a corpus fund, building infrastructure and meeting day to day recurring expenditure of the ISA up to the year 2012-22.
- ISA is now perceived as key to achieving the 2030 Sustainable Development Goals and objectives of the Paris Agreement on Climate Change.

8. Super Cyclone Kyarr

Why in News?

Cyclone 'Kyarr' intensified to become the first Super Cyclonic storm in Arabian Sea in the last 12 years - after Cyclone Gonu ravaged the Oman coast in 2007.

- Super Cyclonic Storm is the highest classification used in the North Indian Ocean.
- It is characterised by hurricane-force winds of above 120 kn (222 kmph)

Super Cyclone Kyarr

- With wind speeds of 220-230 kmph, Kyarr is thought to be the biggest Arabian Sea storm in at least a decade.
- It is likely to move north-west towards Oman coast.
- It has been named by Myanmar.