

WHAT IS A TETHERED DRONE?

The Indian Army recently signed contracts for the procurement of 130 tethered drones and 19 tank-driving simulators under Emergency Procurement (EP).



About Tethered Drone:

- A tethered drone is an **unmanned aerial vehicle tethered to the ground**. The drone can be operated remotely to perform specific tasks.
- It consists of a base station on the ground and the drone, which is connected to the station through the tether (**cable**).
- This tether provides power and data communication to the drone, allowing it to operate for extended periods without the limitations of a finite onboard battery.

Advantages:

- Tethered UAVs are perfect for data capture and telemetry due to the reliability of tethered connections.
- They dramatically reduce technical and human error crashes in flight.
- They provide a secure line of communication between the ground station and the aircraft.
- The physical connection to the ground makes tethered drones less vulnerable to interference or hacking compared to wireless drones.
- It also does not require GPS navigation.
- Many tethered drones have longer flight times compared to free-flying, battery-operated drones.
- Due to the restricted movement of a tethered drone, the operator does not need piloting skills and can mainly focus on their tasks.

ELECTRIFIED FLEX FUEL VEHICLE

Recently, the Minister of Road Transport and Highways of India unveiled the Prototype of BS-6 Stage-II, Electrified Flex fuel vehicle.

About Electrified Flex fuel vehicle:

- It is the **World's first BS-6 Stage-II** Electrified Flex fuel vehicle.

- An Electrified Flex Fuel Vehicle has both a **Flexi Fuel engine** and an **electric powertrain**.

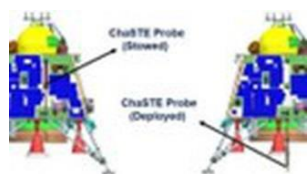
How Do Flexible Fuel Cars Work Using Ethanol?

- Flexible fuel vehicles (FFVs) have an **internal combustion engine** and are capable of operating on gasoline and **any blend of gasoline and ethanol up to 83%**.
- In flex fuels, the ratio of ethanol to petrol can be adjusted, but the most commonly used **flex fuel uses 85 per cent ethanol and 15 per cent petrol**.
- Flex fuel engines are already popular in Brazil, the United States, the European Union and China, among many others.

What is Ethanol?

- Ethanol (also called ethyl alcohol or alcohol) is a **biofuel** with the chemical formula C_2H_5OH .
- It is a **by-product of the sugar production** process and can be an excellent substitute for petrol as a fuel mix.
- Ethanol is more **affordable than petrol**, as it can be produced domestically from crops, unlike crude oil, which needs to be imported.
- It is a complex derivative of biomass left by agricultural feed stocks such as corn, sugarcane, hemp (bhang), potato, and rice, among many other things.
- Using ethanol-blended fuel **can help reduce our carbon footprint** and create a cleaner, healthier environment for future generations.
- Ethanol-blended petrol has significantly **reduced emissions of harmful pollutants** such as carbon monoxide, hydrocarbons, and nitrogen oxides.
- India is **the fifth largest manufacturer of ethanol**, following the US, Brazil, the European Union and China.

ChaSTE PROBE



Recently, the Indian Space Research Organisation (ISRO) released a graph of the temperature variation between the moon's surface and a point around 8 cm below as measured by an instrument

named ChaSTE probe.

About ChaSTE Probe:

- The **Chandra's Surface Thermophysical Experiment (ChaSTE)** is a **temperature probe**.
- It can be driven into the moon's surface using a motor to a depth of up to 10 cm. It has 10 sensors.
- It measured the temperature profile of the lunar topsoil around the South Pole to understand its thermal behaviour.
- It was developed by the **Space Physics Laboratory of ISRO's Vikram Sarabhai Space Centre (VSSC)**, together with the **Physical Research Laboratory (PRL)**, Ahmedabad.
- Its findings reflect this **variation between the moon's surface**, which is covered by a patina of loose rocks and dust called the lunar regolith and 10 cm under it.
- Its data show that **at the moon's surface** (where the lander is located, a point between the craters Manzinus C and Simpelius N), the temperature is **40-50 degrees** But just under 80 mm under, it plunges to **around -10 degrees C**.

Significance of the findings

- The temperature variation indicates that the moon's **topsoil is a powerful thermal insulator**, in keeping with previous findings.
- It adds credence to the idea that it **can be used to build habitats for humans** to shield them from frigid conditions and harmful radiation.

INDIA'S G20 PRESIDENCY: FINANCING THE GREEN TRANSITION

Context

- As India is set to host G20 summit on September 9 and 10, **the subject of climate change and its finance is going to be areas of major discussion**.
- The present commitments made by the developed world, **climate financing mechanism in particular, are insufficient to counter climate change**.

Climate Finance

- Climate finance refers to local, national, or transnational financing.
- The UNFCCC, the Kyoto Protocol and the Paris Agreement **call for financial assistance from Parties with more financial resources to those that are less endowed** and more vulnerable.
- This recognises that **the contribution of countries to climate change and their capacity to prevent it and cope with its consequences vary enormously.**
- Climate finance is needed for **mitigation**, because large-scale investments are required to significantly reduce emissions.
- Climate finance is equally important for **adaptation**, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate.

Way Forward for India and Other Developing Countries Amidst Lack of Commitment from Developed Nations

- **Mobilisation of Resources for Climate Finance**
 - It is now time for countries, especially those like India, to **look within and mobilise resources for climate finance.**
 - It would require different institutions to come together and complement each other.
 - The financial institutions will have to fund technologies that are commercially mature, like wind and solar.
- **Invest in Futuristic Technology**
 - The governments will have to step in for **technologies that are not yet ripe for commercial ventures like green hydrogen** where direct financial support needs to be given for the installation of electrolyzers.
 - The cost of electrolyzers today is prohibitive and only large-scale orders can bring down costs through economies of scale.
- **Engage Private Sector for Adaptation Projects**
 - As far as adaptation measures are concerned, **the private sector has to be roped in. But this will require government intervention.**

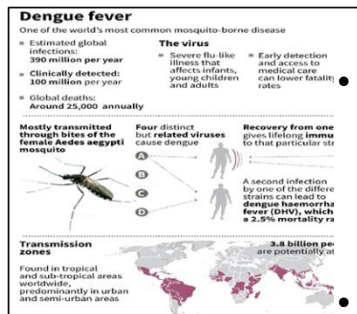
- Worldwide, the major chunk of adaptation finance comes from multilateral development banks in the form of loans. **Private sector participation in adaptation projects is less than 2 per cent.**

DENGUE FEVER: PREVALENCE AND EFFORTS MADE TO FIGHT THE DISEASE

Why in News?

- With the expanding geography of dengue infections in India as well as the world an increasing need has been felt for an effective vaccine that can protect against all four serotypes.

Dengue Fever:



● **About:** It is a **mosquito-borne tropical disease** caused by the dengue **virus**, which belongs to the family **Flaviviridae**, having four serotypes that spread by the bite of infected **Aedes mosquitoes**.

- **How is Dengue spread?**

- **Primary vectors:** Infected female Aedes (especially **Aedes aegypti**) mosquitoes, which are found (in urban habitats) in **tropical and subtropical regions** around the world.
- **These mosquitoes breed primarily** in man-made containers such as buckets of water, potted plants, and other similar items.
- **Role of weather:** Unlike the malaria mosquito (Anopheles), which grows in stagnant water in open settings, the Aedes aegypti mosquito breeds in **freshwater**, bringing mosquitoes closer to humans.
- Water continuously accumulates and is washed away during **heavy rainfall**, sweeping any mosquito larvae away.
- **Dry conditions**, on the other hand, cause rainwater to remain stagnant, which is ideal for mosquito breeding and multiplication.
- **Symptoms:**

- **75%** of dengue infections are asymptomatic (showing no symptoms), **20%** of dengue infections are mild-to-moderate, while **5%** of cases are severe dengue.
- Severe dengue can lead to **dengue hemorrhagic fever**, which causes bleeding, low blood platelet levels and blood plasma leakage, or **dengue shock syndrome**, which causes dangerously low blood pressure.
- **Treatment:** There is **no specific treatment** for dengue or severe dengue, but early detection and access to proper medical care lowers fatality rates to below 1%.

Situation in India:

- Nearly half the population of the world lives at risk of the disease at present.
- **The disease in India** has spread from just 8 states and UTs in 2001 to all states by 2022. **Ladakh** was the last bastion from where two infections were reported last year.
- As per the latest data, there have been **31,464 cases and 36 deaths** due to dengue reported across the country till the end of July this year.
- **The reason** for the larger number of cases in these states is not just the weather, but also the lack of infrastructure for confirming dengue diagnosis.
- There are several efforts ongoing within the country to **develop an effective vaccine** against the mosquito-borne disease that can lead to internal bleeding, circulatory shock, and death.
- **Steps taken by Indian government:**
 - **Creating awareness:** National Dengue Day is observed in India on May 16 with the recommendation of the Ministry of Health and Family Welfare (MoHFW), to create awareness about dengue.
 - **Prevention and control:** National Vector Borne Disease Control Programme is the **nodal centre** for the surveillance and prevention of dengue in India.
 - **Integrated disease surveillance programme:** It also helps in disease surveillance and outbreak detection or investigation of dengue in the country.
 - **Notification of dengue cases:** MoHFW has made notification of dengue cases essential.
 - **Genome sequencing:**

- In a first, Pune's B J Government Medical College to undertake genome sequencing of dengue virus.
 - Genome sequencing will involve analysing the genetic makeup of the virus and **aims to create a comprehensive understanding of dengue.**
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NEWS MEDIA VERSUS OPENAI'S CHATGPT

Why in News?

- A group of news media organisations recently shut off OpenAI's ability to access their content.
- New York Times is planning on suing OpenAI over copyright violations.

About Artificial Intelligence:

- Artificial intelligence (AI) is the **ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligence and discernment.**
- The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience.
- AI algorithms are trained using large datasets so that they can identify patterns, make predictions and recommend actions, much like a human would, just faster and better.

About OpenAI:

- OpenAI is an artificial intelligence research company.
- The company is best known for creating '**ChatGPT**', which is an AI conversational chatbot.
- Users can ask questions on just about anything to ChatGPT and the chatbot will respond accurately with answers, stories and essays.
- It can even help programmers write software code.
- **News outlets told OpenAI that the company can no longer use their published material and their journalism, to train their chat bots.**

Reason Behind News Outlets' Decision:

- Search engines like Google or Bing also use web crawlers to index websites and present relevant results when users search for topics.
 - However, these search engines represent a mutually beneficial relationship.
 - Google, for instance, takes a snippet of a news article (a headline, a blurb and perhaps a couple of sentences) and reproduces them to make its search results useful.
 - And while Google profits off of that content, it also directs a significant amount of user traffic to news websites.
 - On the other hand, OpenAI provides no benefit, monetary or otherwise, to news companies.
 - It simply collects publicly available data and uses it for the company's own purposes.
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CHINA INCLUDES ARUNACHAL PRADESH, AKSAI CHIN AREA IN NEW MAP

India – China Border Dispute

- **Western Sector (Disputed sector) –**
 - This comprises the Aksai Chin sector. A region that originally was a part of the state of Jammu and Kashmir is claimed by China as part of its autonomous Xinjiang region.
 - After the 1962 war, it is administered by China. It is the second largest Indo-China border area covering over 38000 sq. km. However, it is an uninhabited land.
 - While India claims the entire **Aksai Chin territory** as well as the **Shaksgam valley** (Indian territory gifted to China by Pakistan), China contests Indian control over Daulat Beg Oldi (a tehsil in Leh, south of Aksai China - it is believed to host the world's highest airstrip).
- **Central Sector**
 - The 625 km boundary of this sector is least controversial between two nations.
 - There is no major disagreement over boundary in this region between two countries.
- **Border Dispute in Eastern Sector: McMahon Line**
 - The disputed boundary in the Eastern Sector of the India-China border is over the McMahon Line.
 - Representatives of China, India and Tibet in 1913-14 met in Shimla to settle the boundary between Tibet and India, and Tibet and China.

- During the Shimla conference, Sir Henry McMahon, the then foreign secretary of British India, drew up the 550 mile (890 km) McMahon Line as the border between British India and Tibet.
- **Steps taken by India to counter Chinese threat in eastern sector**
 - India is ensuring full operational preparedness to take care of any contingency.
 - It is working towards mitigating the threat to the vulnerable Chicken's Neck area.
 - Chicken's Neck area or the Siliguri Corridor is the narrow strip of land that connect the North-east with rest of India.
 - India raised a new **aviation brigade in the eastern sector** in 2021.
 - Situated at at Missamari in Assam, the brigade is mandated with the task of increasing surveillance along the LAC in the eastern sector.
 - India has based the **second Rafale fighter squadron in Hasimara** (close to the Sikkim-Bhutan-Tibet tri-junction).
 - Sukhoi-30MKI jets are already deployed at air bases like Tezpur and Chabua.
 - Akash surface-to-air missile systems along with Bofors howitzers have been deployed.

News Summary: China includes Arunachal Pradesh, Aksai Chin area in new map

- China released the 2023 edition of its standard map based on the drawing method of national boundaries of China and various countries in the world.
- The map showed Arunachal Pradesh, which China claims as South Tibet, and Aksai Chin occupied by it in the 1962 war.
- The map also **incorporated Taiwan**, which China claims as part of its territory though the island sees itself as a sovereign nation, and **the nine-dash line**, claiming a large part of the South China Sea.
- In a rebuttal to newly released Chinese map, Union External Affairs Minister S Jaishankar said that making absurd claims over territories wouldn't make them theirs.