

## Prelim Bits 17-04-2024 | UPSC Daily Current Affairs

### C-C nozzle

*The Indian Space Research Organisation (ISRO) recently said that it has successfully developed a lightweight Carbon-Carbon (C-C) nozzle for rocket engines.*

- It is a lightweight Carbon-Carbon (C-C) nozzle to enhance the vital parameters of rocket engines.
- **Developed by** - Indian Space Research Organisation (ISRO).
- The key feature of the nozzle is its **anti-oxidation coating of Silicon Carbide**, which extends its operational limits in oxidizing environments.
- This coating reduces thermally induced stresses and enhances corrosion resistance, allowing for extended operational temperature limits in hostile environments.
- Polar Satellite Launch Vehicle (PSLV)-4 currently employs twin engines with nozzles made from **Columbium alloy**.
- By replacing the engines with C-C nozzle, a mass reduction of approximately 67% can be achieved.
- This substitution is projected to increase the payload capability of the **PSLV by 15 kg**.
- **Features**
  - Low density
  - High specific strength
  - Excellent stiffness
  - Capable of retaining mechanical properties even at high temperatures.

### References

1. [Times of India | Carbon-Carbon Rocket Engine Nozzle](#)
2. [ISRO | Carbon-Carbon Nozzle for Rocket Engines](#)
3. [India Today | Carbon-Carbon \(C-C\) nozzle](#)

### Global Forest Watch Monitoring Project

*The recent report of Global Forest Watch monitoring project says that India has lost 2.33 million hectares (6%) of tree cover since 2000.*

## **Findings**

- **Loss of Primary forests** - India lost **4.1%** of humid primary forest from 2002 to 2023, making up 18% of its total tree cover loss in the same period.
- **Absorption of Co2** - Between 2001 and 2022
  - India emitted 51 million tons of carbon dioxide equivalent a year
  - Removed 141 million tons of carbon dioxide equivalent a year,
  - Represents a net carbon sink of 89.9 million tons of carbon dioxide equivalent a year.
- **Loss of Natural forests** - The data showed that 95% of the tree cover loss in India from 2013 to 2023 occurred within natural forests.
- The country lost 175,000 hectares of tree cover in 2016 and 144,000 hectares in 2023, the highest in the last 6 years.
- The maximum tree cover loss occurred in **2017**.
- **Highest tree cover lost states** - The GFW data showed that 5 states accounted for 60% of all tree cover loss between 2001 and 2023.
- **5 States** - Assam, Mizoram, Arunachal Pradesh, Nagaland and Manipur.

*According to the Food and Agriculture Organisation, the rate of deforestation in India was 668,000 hectares per year between 2015 and 2020, the 2<sup>nd</sup> highest worldwide*

- **Loss due to fires** - The data showed India lost 35,900 hectares of tree cover due to fires from 2002 to 2022, with its maximum in 2008.
- **Highest tree cover losing states due to fires (2001 to 2022)** - Odisha, Arunachal Pradesh, Nagaland, Assam, and Meghalaya.

## **Global Forest Watch (GFW)**

- It is an online platform that provides data and tools for monitoring forests.
- It is established by **World Resources Institute (WRI)**, launched in **1997**.
- GFW uses cutting-edge technology that allows anyone to access near real-time information about where and how forests are changing around the world.

## **References**

1. [The Indian Express | Global Forest Watch Report](#)
2. [Global Forest Watch | About](#)

## **Bhandasar Jain Temple**

- The Bhandasar Jain Temple is a **temple made of ghee**, situated in **Bikaner, Rajasthan**.
- It was constructed by the wealthy Jain merchant **Bhandasa Oswal**.
- This temple is dedicated to the **5<sup>th</sup> Tirthankara, Sumatinatha**.
- It is protected by the **Archaeological Survey of India**.
- It is said that during a period of severe drought, when water was scarce, Bhandasa Oswal decided to use ghee (40,000 kilogram), as a substitute for water in the temple's mortar.
- **Architecture-** The temple itself is a 3-storied marvel, constructed using **red sandstone** with intricate **yellow-stone carvings** adorning its walls, pillars, and mandapa.
- The sanctum, or garbhagriha, is a **pancharatha**, covered by a shikhara with karna-amalakas and amalakas at the top.
- The temple's walls are embellished with leaf paintings, frescoes, and ornamented mirror work, which depict the lives of the **24 Tirthankaras**.



## **References**

[Times of India | Bhandasar Jain Temple](#)

**Thiruvalluvar**

- Thiruvalluvar, a revered ancient saint, poet, and philosopher with no caste or religion, has been regarded as a Tamil cultural and moral icon.
- **Historicity** - His family history, religion, or location of birth are all unknown certainties.
- The period during which he lived is debated.
- Some accounts place him in the 3<sup>rd</sup> or 4<sup>th</sup> century CE; others date him in the 8<sup>th</sup> or 9<sup>th</sup> century.
- He has been identified as both a Hindu and a Jain sage, while Dravidian groups consider him as a saint with no religious identifiers except his Dravidian roots.
- **Thirukkural** - The 'Thirukkural' or 'Sacred Couplets', a collection of moral aphorisms in verse that is attributed to Thiruvalluvar, does not name him as its author.
- He is named first in a later collection of verses known as 'Thiruvalluva Malai'.
- In 1935, the Tamil Nadu government officially recognized **31 BCE as the year of Valluvar.**

## **Tirukkural**

- The Tirukkural, or the Kural, is a classic Tamil language text consisting of 1,330 short couplets, or kurals, of 7 words each.
- Its 133 sections of 10 couplets each are divided into 3 books - aram (virtue), porul (government and society), and kamam (love).
- It is widely acknowledged for its universality and secular nature.
- It is one of the **Patiren-kirkkanakku ("Eighteen Ethical Works") in Tamil literature.**

## **References**

1. [The Indian Express | Thiruvalluvar](#)
2. [Britannica | Thiruvalluvar](#)

## **Men5CV Vaccine**

*Nigeria has become the 1<sup>st</sup> country in the world to roll out a new vaccine (called Men5CV) against meningitis.*

- It protects people against 5 strains (A, C, W, Y and X) of the **meningococcus bacteria.**
- It was recommended by the **World Health Organization (WHO).**

- The vaccine and emergency vaccination activities are funded by Gavi, the Vaccine Alliance.

*Nigeria is one of the 26 meningitis hyper-endemic countries of Africa, situated in the area known as the African Meningitis Belt.*

## **Meningitis**

- Meningitis is a serious infection that leads to the inflammation of the membranes (meninges) that surround and protect the brain and spinal cord.
- There are multiple causes of meningitis, including viral, bacterial, fungal and parasitic pathogens.
- Bacterial meningitis is the most serious, can also result in septicaemia (blood poisoning), and can seriously disable or kill within 24 hours those that contract it.
- **Symptoms** - Headache, fever and stiff neck.
- **Road map to meningitis** - In 2019, WHO and partners launched the global roadmap to defeating meningitis by 2030.
- The roadmap sets a comprehensive vision towards a world free of meningitis, and has 3 goals:
  - Elimination of bacterial meningitis epidemics;
  - Reduction of cases of vaccine-preventable bacterial meningitis by 50% and deaths by 70%; and
  - reduction of disability and improvement of quality of life after meningitis due to any cause.

## **Reference**

[WHO | Nigeria introduces new 5-in-1 vaccine](#)