

1. Hydrogen Powered Jet Engine



Topic: Science and Technology

In News: Rolls-Royce has successfully run an aircraft engine on hydrogen.

More on the Topic

- Tested aircraft engine, used green hydrogen created by wind and tidal power.
- The test is intended to prove that hydrogen can safely and efficiently deliver power for civil aero engines.
- Hydrogen is one of a number of competing technologies that could help the aviation industry achieve its goal of becoming net zero by 2050.

About Hydrogen Internal Combustion Engine:

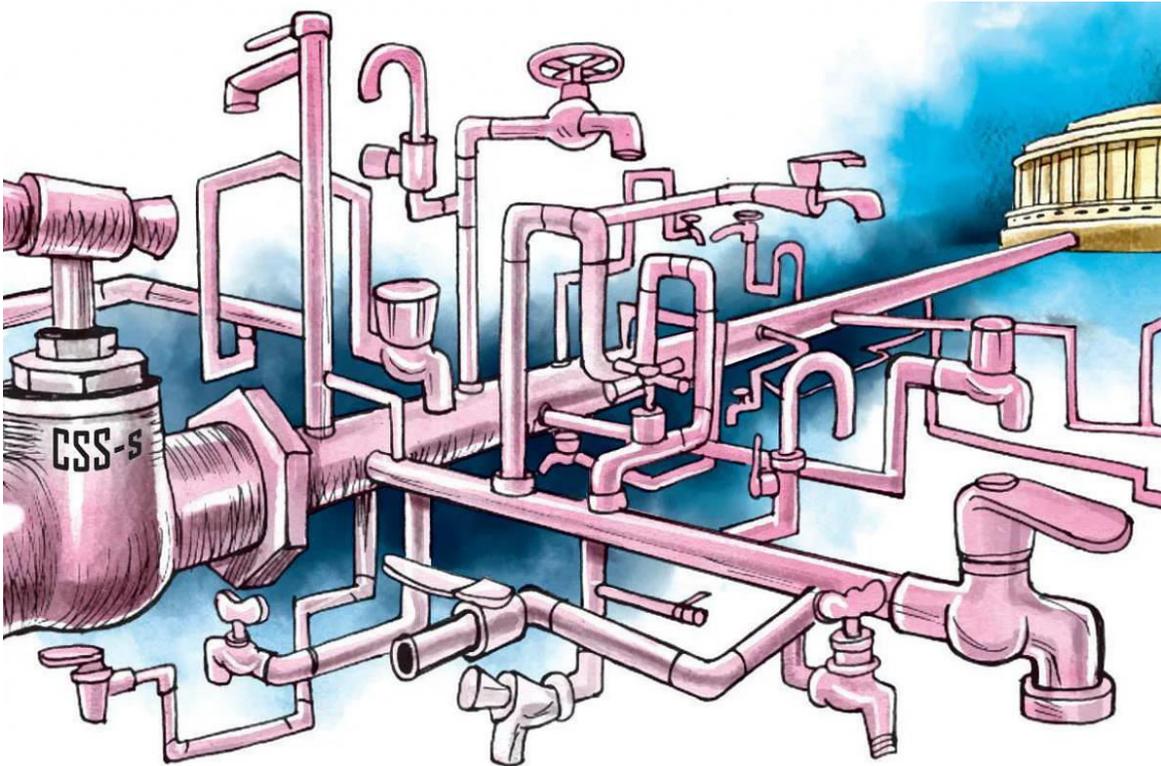
- A hydrogen internal combustion engine (ICE) works on the same principles as a traditional ICE, except that it uses hydrogen in place of a petroleum-based fuel.
- Burning the hydrogen fuel produces the energy needed to drive the engine.

Significance of Hydrogen Fuel to the Aviation Industry:

- Hydrogen combustion engines can leverage existing technologies and provide a **zero-emissions option for specific use cases** while supporting the growth of hydrogen infrastructure.
- Hydrogen is a clean fuel, no emission of carbon monoxide, hydrocarbons and particulate matter is there.
- Wider flammability range (temperature band within which hydrogen can be combusted) allows for a wider range of fuel-air mixtures.
- Hydrogen ICE can be operated with lower grade hydrogen.

Source: Indian Express

2. Recalibration of Central Schemes



Topic: Governance

In News: In order to reduce unnecessary expenditure, the Niti Aayog and the Economic Advisory Council to the Prime Minister are jointly reviewing all central sector and centrally-sponsored schemes, which account for 40-50% of the annual Budget.

More on the Topic:

- There are about 740 central sector schemes (CS) and 50 centrally-sponsored schemes (CSS), which accounted for Rs 16.2 trillion or 41% of the FY23 Budget of Rs 39.4 trillion.
- The government wants to cut down the number of schemes, merge them or set sunset clauses to stop running them indefinitely.

The Need for Re Calibration:

- Many schemes overlap.
- Most of the schemes do not have a sunset clause, they are continuing indefinitely without much efficiency.

- Many of the schemes are not generally linked to outcomes and are process-based.
- 'One-Size-Fits All' approach of CSS gives less flexibility to states in implementing. This reduces the impact on the ground.

About Central Sector Schemes:

- These schemes are **funded and implemented by the union government**.
- Usually they are schemes related to the subjects over which union government has jurisdiction as per Schedule VII.

Source: Down to Earth

3. Perennial variety of rice



Topic: Agriculture

In News: Farmers in China are now growing a perennial variety of rice which does not need to be planted every year.

More on the Topic:

- Researchers at the Yunnan University have developed a variety of perennial rice named **PR23 by cross-breeding regular annual rice *Oryza sativa* with a wild perennial variety from Africa**.
- Unlike regular rice which is planted every season, PR23 can yield eight consecutive harvests across four years (as these plants with stronger roots grow back vigorously after each harvest).
- PR23 yields, reported at 6.8 tons per hectare, are comparable to regular irrigated rice.
- But growing it is much cheaper since it requires less labour, seeds and chemical inputs.
- The invention could transform rice farming by making it climate-friendly, besides using less of labour and other inputs.
- **Cons:** Needs one to two more herbicide treatments than regular rice,
- More work to resow the perennial rice when its yield falters etc.



New Indian Rice Varieties:

- The Indian Agricultural Research Institute (IARI) has developed the country's first-ever non-GM (genetically modified) herbicide-tolerant rice varieties (Pusa Basmati 1979 and Pusa Basmati 1985).
- These varieties **can be directly seeded** and significantly save water and labour **compared to conventional transplanting**.

Paddy Cultivation:

- **Paddy cultivation** takes place across a wider geography, unlike wheat which is grown only in a few states north of the Vindhyas.
- Also, rice is both a Kharif (monsoon) and rabi (winter-spring) season crop.
- Rice grows best in **areas of warm, humid climate; rice requires temperatures between 20°C and 35°C and a well-distributed rainfall of about 100 cm or irrigation facilities**.
- Fertile soil is most preferred. Delta and valley soils are the most suitable. Soils with higher clay content are preferred for its cultivation due to their better moisture retention capacity.

Source: Hindu

4. India's first private launchpad



Topic: Science and Technology

In News: Chennai-based space tech startup Agnikul Cosmos has announced the inauguration of its own private launchpad at Sriharikota.

More on the Topic:

No 18, B.B.M.P Building
Kanakapura road ,
Tata Silk Farm, Jayanagar,
Bengaluru, Karnataka-560028

+91 89710 43904 | rvta@rvei.edu.in

Go, change the world

- The facility has two parts—the Agnikul launchpad and the Agnikul mission control centre—which are four kilometres apart.
- The launchpad was designed to accommodate and support **liquid stage-controlled launches**.
- The startup plans to launch its Agnibaan rocket from this launchpad.
- Agnibaan is a **two-stage launch vehicle that is capable of taking payloads of up to 100 kilograms to a low-earth orbit around 700 kilometres from the surface of the Earth**.
- The Agnibaan rocket will be powered by **the company’s 3D-printed Agnilet engines**.
- The Agnilet rocket is a **“semi-cryogenic” engine that uses a mixture of liquid kerosene and supercold liquid oxygen to propel itself**.
- Agnikul test-fired the Agnilet engine at ISRO’s facilities earlier this year.

Source: PIB

5. Jeypore Ground Gecko



Topic: Environment and Ecology

In News: Rare Jeypore Ground Gecko listed in Appendix 2 to stall its trafficking.

More on the Topic:

- The proposal to include the gecko in Appendix II was made by India at the recently-concluded 19th Conference of Parties (COP19) to CITES in Panama City. The proposal was adopted by the members of the Working Group.



- The animals listed under Appendix II may not necessarily be threatened with extinction, but trade in such species should be controlled to ensure it does not threaten their existence.

Conservation Status:

- In 2019, the Jeypore Ground Gecko was assessed for the International Union for Conservation of Nature (IUCN)'s Red List of Threatened Species and **was listed as 'endangered'**.

About Jeypore Ground Gecko:

- The species is rare and was first described by British officer and amateur naturalist Colonel Richard Henry Beddome in 1878 and rediscovered by a team of researchers led by Ishan Agarwal in 2010 and 2011, after a gap of over 130 years.
- The wild reptile species is found in the **Eastern Ghats and is known to be present** in four locations including southern Odisha and northern Andhra Pradesh.
- Its occurrence is estimated in less than 5,000 square kilometres of fragmented geographical area.
- The species resides **below rock boulders in high forested hills at an altitude of 1,100-1,400 metres.**

Source: Business Standard

6. Fujiwhara Effect



Topic: Geography

In News: Recently two cyclones, namely Hinnamnor and Gardo interacted showcasing Fujiwhara Effect.

More on the Topic:

- The Fujiwhara Effect is **any interaction between tropical storms formed around the same time in the same ocean region with their centres or eyes at a distance of less than 1,400 km**, with intensity that could vary between a depression (wind speed under 63 km per hour) and a super typhoon (wind speed over 209 km per hour)
- Outcome of Fujiwhara effect may include Changes in track and intensity of either or both systems.
- In rare cases, two systems could merge to form a bigger storm.

Source: Down to Earth

7. Re-Hab Project

Topic: Government Policies



In News: Khadi and Village Industries Commission has inaugurated the ambitious Re-Hab Project (Reducing Human Attacks using Honey Bees) at Nainital, Uttarakhand.

More on the Topic:

- Re-Hab project is running in 7 states of the country, namely in Karnataka, Maharashtra, West Bengal, Assam and Orissa, **where attacks of the elephants is more common**,
- Under this project **fencing of bee boxes is installed** in such areas from where elephants move towards the human settlements and farmers' agriculture.
- Fencing of Bee-boxes on the routes of movement of elephants blocks the path of wild elephants.



RV Educational Institutions®
RV Training Academy
(Sardar Vallabh Bhai Academy)

- In this way, through honey-bees, elephants can be prevented from attacking humans and destroying farmers' crops.

Source: Business Standard

No 18, B.B.M.P Building
Kanakapura road ,
Tata Silk Farm, Jayanagar,
Bengaluru, Karnataka-560028

+91 89710 43904 | rvta@rvei.edu.in

Go, change the world