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Hydrogen Train

- The Indian Railways has planned to introduce trains that do not run on diesel or electricity. Soon, train engines will operate using hydrogen gas.
- For passenger convenience, train coaches are being upgraded, similar to luxury high-speed trains like 'Tejas' and 'Vande Bharat.'
- Diesel trains emit smoke that pollutes the air. Many countries are exploring alternative fuels to replace diesel.
- In this search, India has achieved a significant milestone by planning to run a train powered by water for the first time.
- Using advanced hydrogen fuel technology, hydrogen trains will operate. India will become the fifth country, alongside Germany, France, Sweden, and China, to use hydrogen-powered trains.

Special Features:

- The production cost for a hydrogen train is approximately ₹80 crores. These trains utilize water, splitting it into hydrogen and oxygen, and using hydrogen as fuel.
- Each hour, the train will require about 40,000 liters of water, and special storage facilities will be provided in the train coaches.
- Hydrogen trains, which emit no carbon, will be launched this December, according to the Railways. A total of 35 hydrogen-powered trains will be operational across the country.
- The first hydrogen-powered train will run on the 90-km 'Jind-Sonipat' route in Haryana and will soon be introduced in Darjeeling, Nilgiri, and Shimla mountain routes.
- The train can reach speeds of up to 140 km/h and travel up to 1,000 km on a single run.

Second Place for Women-led Small Businesses in Tamil Nadu

- Under the central government's 'Udyam' scheme, 33 lakh small, micro, and medium enterprises (MSMEs) have been registered in Tamil Nadu. Of these, 6.21 lakh enterprises are led by women.
- Across the country, the central government provides 'Udyam' certification to streamline MSMEs.
- For this, businesses must self-register on the 'Udyam' online portal under the Ministry of Micro, Small, and Medium Enterprises.

- Enterprises with this certification are given priority in bank loans and subsidy benefits.

State	Number (in lakhs)
Maharashtra	7.76
Tamil Nadu	6.21
Uttar Pradesh	3.50
Karnataka	2.87
Gujarat	2.36

140 Women Murdered Daily by Family Members

- In 2023, a UN report revealed that an average of 140 women and girls globally were murdered daily by their husbands, partners, or close family members.
- Approximately 51,100 women and girls were killed worldwide in 2023, with their husbands, partners, or close family members being the culprits.
- Africa recorded the highest number of such murders (21,700 cases).
- Compared to Africa's population, 2.9 women per 100,000 were affected.
- In the Americas, the rate was 1.6 women, in Oceania (Australia and New Zealand), it was 1.5 women, in Asia, 0.8 women, and in Europe, 0.6 women per 100,000 were affected.
- In 2023, 80% of those killed were men and 20% were women. Although most victims of homicide are men, women and girls in close circles face severe violence, such as murder.

Gaganyaan Project

- Under the ISRO-NASA collaborative 'Axiom-4' project, Gaganyaan astronauts Subanshu, Shukla Prashanth, and Balakrishnan Nair began their training in August this year.
- As part of the project's initial phase, they toured NASA's facilities, explored rocket launch systems, and assessed spacesuits and preferred space foods at SpaceX.
- They were trained in understanding the interior structure of the SpaceX Dragon spacecraft and the International Space Station, taking photos from space, daily activities, and communication protocols.
- Training included emergency measures to be taken in space during critical situations.
- ISRO scientists undergoing training with SpaceX Dragon spacecraft will participate in many space missions, according to the Minister of Science and Technology, Jitendra Singh, who announced this last August.

