

Current Affairs search results for tag: science-and-technology

1. Nitin Gadkari launches Toyota's pilot project on Flex-Fuel Strong Hybrid Electric Vehicles (FFV-SHEV) in India (Oct. 11, 2022)

Union Minister for Road Transport and Highways **Nitin Gadkari** launched Toyota's first of its kind pilot project on Flex-Fuel Strong Hybrid Electric Vehicles (FFV-SHEV) in India on 11 October 2022, which would run on 100% petrol as well as 20 to 100% blended ethanol and electric power.

The Toyota car which was unveiled by the minister has been imported from Toyota Brazil. Flex-fuel vehicles are at present available in Brazil, the USA and Canada.

Ethanol in India is mainly derived from molasses of the sugarcane.

An FFV SHEV has a flex-fuel engine and an electric powertrain, providing dual benefit of higher ethanol use and greater fuel efficiency. It can run for a significant time period on its Electric Vehicle mode, wherein the engine is shut off.

Flex-fuel compatible cars can run on more than one type of fuel and also a mixture of fuel. It typically runs on a blend of petrol and ethanol or methanol is used.

FFVs provide an opportunity of greater substitution of petrol by ethanol as it is capable of using any of the higher blends of ethanol mix from 20 per cent up to 100 per cent.

Toyota was also the first company in India to launch India's **first green hydrogen-based advanced fuel cell electric vehicle (FCEV), Toyota Mirai**.

Toyota Motor Company of Japan has a joint venture with Kirloskar in India and the company is called as Toyota Kirloskar Motor Ltd.

2. Second United Nations World Geospatial Information Congress (Oct. 11, 2022)

The **Committee of Experts on Global Geospatial Information Management (UN-GGIM)** is organizing the 2nd United Nations World Geospatial Information Congress (**UNWGIC**) in **Hyderabad, India** from 10-14 October 2022.

Important facts

- It is organized by the Government of India through the **Ministry of Science and Technology**.
- It is a global event bringing all stakeholders together to address at the highest level and ensure that geospatial information has broad utility in sustainable social, economic and environmental development.
- **The theme** of the congress is "**Geo-Enabling the Global Village : No one should be left behind**".
- The second UNWGIC will reflect the importance of integrated geospatial information to support sustainable development and the well-being of society, address environmental

and climate challenges, embrace digital transformation and technological development, and catalyze a vibrant economy.

About UNWGIC

- It is organised by the United Nation Committee of Experts on Global Geospatial Information Management (**UN-GGIM**).
- Its objective is to enhance international collaboration among the Member States and relevant stakeholders in Geospatial information management and capacities.
- It is conducted **every four years**.
- **The first** UNWGIC was organized by **China in October 2018**.

About UN-GGIM

- It aims to play a leading role in setting the agenda for the development of global geospatial information and promoting its use to address major global challenges.

What is Geospatial Technology?

- It is an emerging field of study that includes **Geographic Information Systems (GIS), Remote Sensing (RS), and Global Positioning Systems (GPS)**.
- It enables us to obtain data that is in reference to the Earth and used for **analysis, modelling, simulation and visualization**.
- This technology can be helpful in making decisions based on the importance and priority of scarce natural resources.
- Geospatial technology was used optimally during the **COVID-19** vaccination campaign.

3. Chandrayaan-2 spectrometer maps abundance of sodium on moon for first time (Oct. 10, 2022)

The **X-ray spectrometer 'CLASS' instrument** on the **Chandrayaan-2** orbiter has mapped an abundance of **sodium** on the moon for the first time, according to the Indian Space Research Organisation.

Important facts

- This is the first attempt to measure sodium on the lunar surface on a global scale using **X-ray fluorescent spectra**.
- **CLASS** was built at the U R Rao Satellite Centre of ISRO in Bengaluru.
- This report has recently been published in '**The Astrophysical Journal Letters**'.
- The new findings from Chandrayaan-2 provide an opportunity to study surface-exosphere interactions on the Moon.

X-Ray Fluorescence

- It is commonly used to study the structure of matter in a non-destructive way.
- When the Sun generates a solar flare, a large amount of X-ray radiation falls on the Moon, triggering X-ray fluorescence.
- CLASS measures the energy of incoming X-ray photons from the Moon and calculates the total number.
- The energy of the photon indicates the atom (for example, sodium atoms emit X-ray photons of 1.04 keV) and the intensity indicates the number of the atom.

4. U S and India launch a joint task force on energy storage technologies (Oct. 8, 2022)

India and the United States have launched a new task force under the Strategic Clean Energy Partnership (SCEP), which will focus on the accelerated deployment of energy storage technologies.

Battery energy storage systems (BESS), are devices that enable energy from renewables, like solar and wind, to be stored and then released when customers need power most.

The task force was announced during the meeting of the Union minister for Petroleum and Natural Gas **Hardeep Puri** and the US Energy Secretary Jennifer Granholm in **Washington** on 7 October 2022.

They also issued a US India Strategic Clean Energy Partnership (SCEP) joint statement which highlighted the importance of bilateral clean energy engagement to strengthen energy security and to accelerate clean, secure, and just energy transition.

5. Humanoid Vyommitra (Oct. 8, 2022)

The pre-flight ground test of **Vyommitra**, the humanoid designed and developed by the **Indian Space Research Organization (ISRO)** to fly on the **Gaganyaan mission**, began on 7 October.

Important facts

- The humanoid '**Vyommitra**' is currently undergoing pre-flight ground testing at ISRO **Inertial Systems Unit (IISU)**.
- IISU is responsible for the design and development of inertial systems for ISRO's launch vehicle and spacecraft programmes.

About Vyommitra

- It is an **AI-based robotic system** developed at a robotics lab at the **Vikram Sarabhai Space Centre (VSSC) at Thumba, Thiruvananthapuram**.

- It is a combination of two **Sanskrit words Vyoma (space) and Mitra (friend)**, which will be sent on the first **unmanned Gaganyaan flight**.
- Humanoid will simulate the human tasks required of space before real astronauts can take off.
- It is designed in a **human-like shape**.
- Vyomitra, designed to speak in **Hindi and English**, can act as a companion to the **astronauts**, interact with them and answer their questions.
- It will accurately simulate human actions in space and check whether the systems are working properly.

Indian Space Research Organisation (ISRO)

- It was set up on **15 August 1969**
- It is India's national space agency.
- Headquarters: **Bengaluru**
- Chairman: **S.Somanath**

6. PM Modi to declare Gujarat's 'Modhera' as India's First Solar-Powered Village on 9 October (Oct. 7, 2022)

Prime Minister Narendra Modi will declare Gujarat's village **Modhera** as India's first solar-powered village on October 9, 2022. The village is supplied electricity during the daytime through the rooftop solar panels installed in the village and during night the Battery Energy Storage System (BESS) provides power supply to the houses.

In 2019 the Central government and the state government started the joint project to power the Modhera village in Mehsana district with solar power.

The Gujarat government had allotted 12 hectares of land for development of this project and an amount of Rs 80.66 crore was spent on a 50:50 basis by Centre and state government in two phases,

More than 1,300 1 kW rooftop solar systems have been installed on houses which generate electricity. And electricity is supplied free of cost to the villagers .

The Prime Minister will also inaugurate a solar-powered 3-D projection facility for the **Modhera's Sun Temple**. The solar-powered 3-D projection will educate visitors about the history of Modhera.

Gujarat Chief Minister : **Bhupendra Patel**

7. AIIA signs Mou with NIAIST, Japan to promote collaboration in Research of Ayurveda and Traditional medicine (Oct. 7, 2022)

The All India Institute of Ayurveda (AIIA), under the Ministry of AYUSH, and the National Institute of Advanced Industrial Science and Technology (AIST), Japan have signed an Memorandum of Understanding (MoU) on 7 October 2022 in New Delhi to promote Institute's research activities both at a national and international stage.

The MoU will enable both countries to promote research collaboration and building capacities in the field of the Indian Ayurvedic system of traditional medicines. All these activities will be executed in support of the Ministry of Ayush.

AIIA already has MoUs with the European Academy of Ayurveda, Bernstein, Germany; Western Sydney University, Australia; Graz Medical University, Austria; College of Medical, UK; London School of Hygiene & Tropical Medicine, UK and Federal University of Rio de Janeiro, Brazil.

All India Institute of Ayurveda (AIIA)

All India Institute of Ayurveda is an apex institute for Ayurveda which is being set up in New Delhi. It has been set up to make Ayurveda an evidence based treatment and standardize the Ayurveda drugs.

Current Director of AIIA: **Professor Tanuja Manoj Nessari.**

AYUSH (Ayurveda, Yoga, Unani, Siddha, Homoeopathy)

- The Ministry of AYUSH was set up on the 9th of November 2014 to revive the knowledge of traditional Indian systems of medicine.
- It focuses on education and research in the fields of Ayurveda, Yoga Naturopathy, Unani, Siddha, and Homoeopathy.
- Minister of AYUSH: **Sarbananda Sonowal**

8. NASA's SpaceX Crew-5 launches to the International Space Station (Oct. 6, 2022)

SpaceX successfully launched four astronauts on **NASA's Crew-5 mission** to the International Space Station (ISS) on October 5.

Important facts

- This is the first time that the **Elon Musk-led company** has sent Russian astronauts into space from its launching vehicle.
- The Crew-5 mission consists of **two American, one Japanese and one Russian astronaut.**
- These include NASA astronauts Nicole Mann and Josh Cassada, who will serve as mission commanders and pilots.
- Astronaut Koichi Wakata of **Japan Airspace Exploration Agency (JAXA)** and **Cosmonaut Anna Kikina of Rokosmos** will serve as mission specialists.
- With the help of the Falcon-9 rocket, Crew Dragon Endurance will reach the International Space Station at a speed of 17,500 mph.
- By reaching space, Crew-5 will do more than **200 science experiments.**

- This launch has been done under an exchange deal between NASA and the Russian space agency **Rokosmos**.
- The top Dragon spacecraft of the Falcon-9 rocket has been launched from **NASA's Kennedy Space Centre in Florida**.

About SpaceX

- It is a private spaceflight company that sends satellites and people to space, including NASA crews to the **International Space Station (ISS)**.
- The company sent its first two astronauts to the ISS on May 30, 2020, aboard the SpaceX Crew Dragon, and several more on behalf of NASA and other organizations.
- As of mid-2022, it is the only commercial spaceflight company capable of sending astronauts into space.
- SpaceX was founded by **Alan Musk**, a South African-born businessman and entrepreneur.

About International Space Station (ISS)

- It is a multi-nation construction project that is the **largest single structure** humans ever put into space.
- Its main construction was **completed between 1998 and 2011**.
- It is not owned by a single nation and according to the **European Space Agency (ESA) is a "co-operative program"** between Europe, the **United States, Russia, Canada and Japan**.
- As of May 2022, 258 individuals from **20 countries** have visited the International Space Station.
- The top participating countries include the **United States (158 people) and Russia (54 people)**.

9. Indian Mars Orbiter mission finally comes to end after 8 years of mission (Oct. 3, 2022)

According to the reports quoting [ISRO](#) (Indian Space Research Organisation) the India's Mars Orbiter spacecraft or **Mangalyaan** has run out of propellant and its battery drained beyond the safe limit. It signals perhaps the end of the mission which was launched eight years ago and was designed to function for 6 months.

According to ISRO, the orbiter recently went into a long eclipse, and after that, there was no communication from it. The satellite had gone into eclipse earlier also and performed automatic maneuvers to come out of eclipse and re-establish communications. But if there is no fuel left, it would not be able to perform those automated movements.

The Mangalyaan was launched in a **Polar Satellite Launch Vehicle (PSLV) C25** on **5 November 2013** and reached Mars on 24 September 2014. It was ISRO's first interplanetary

mission. At a budget of Rs 450 crore (\$74 million), it is one of the most cost-effective space missions in the world.

The Mars mission was designed to last just six months, and the probe has sent a huge volume of data from the red planet in these eight years. The spacecraft carries five scientific instruments, Mars Colour Camera (MCC), Thermal Infrared Imaging Spectrometer (TIS), and Methane Sensor for Mars (MSM), Mars Exospheric Neutral Composition Analyser (MENCA) and Lyman Alpha Photometer (LAP).

Indian Space Research Organisation (ISRO)

It was set up on 15 August 1969

It is India's national space agency. It launches its space rocket from Satish Dhawan Space Centre at Sriharikota in Andhra Pradesh.

Headquarters: **Bengaluru**

Chairman: **S.Somanath**

10. Defence Minister inducted first indigenously developed light combat helicopters into Indian Air Force in Rajasthan (Oct. 3, 2022)

Defence Minister **Rajnath Singh** inducted the first indigenously developed [light combat helicopters](#) (LCH) named **Prachand** was inducted into **Indian Air Force (IAF)** at **Jodhpur** in Rajasthan on October 3.

Important facts

- The LCH was inducted at an event in Jodhpur in the presence of Defence Minister Rajnath Singh and Chief of the Air Staff, Air Chief **Marshal VR Choudhary**.
- The LCH is designed to promote the combat prowess of the Indian Air Force.
- In March 2022, the Prime Minister Narendra Modi-led Cabinet Committee on Security (CCS) had approved the purchase of 15 indigenously developed **Limited Series Production (LSP) LCHs at a cost of Rs 3,887 crore**.

About Light Combat Helicopter (LCH)

- It is a dedicated combat helicopter designed and developed indigenously by **Hindustan Aeronautics Limited (HAL)**.
- The Advanced Light Helicopter in LCH is similar to **Dhruv**.
- It has several stealth features, armoured-protection system, night attack capability and crash-worthy landing gear.
- The helicopter can be deployed for high-altitude bunker-busting operations, counter-insurgency operations in jungles and urban environments, as well as assisting military forces on the ground.
- It has indigenized several key aviation technologies like **glass cockpit and composite airframe structure**.

- It is the only attack helicopter in the world that can **land and take-off at an altitude of 5,000 meters or 16,400 feet** with weapons that meet the specific requirements of the Indian Armed Forces.