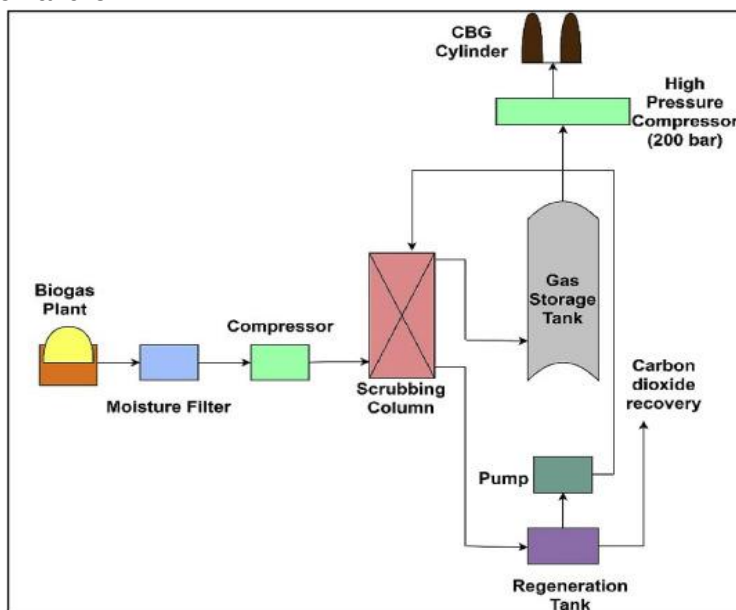


1 December, 2023

SBM-GOBARDhan Biogas Conference

Context: The Ministry of Housing and Urban Affairs (MoHUA) is hosting the 'SBM-GOBARDhan Biogas Conference' on December 1, 2023, to accelerate waste-to-wealth initiatives and promote a circular economy.

- **Partnerships:** The conference is in collaboration with **GIZ, Circular Waste Solutions, and UNIDO.**
- **GOBARDhan Initiative:**
 - ✓ GOBARDhan is a Government of India initiative aiming to **convert waste into wealth.**
 - ✓ It seeks to establish **Biogas/Compressed Biogas (CBG)/Bio-Compressed Natural Gas (CNG) plants** for sustainable economic growth and a circular economy.
- **Net-Zero Emissions Goal:** India aims for net-zero emissions by 2070, with waste-to-biogas playing a crucial role according to Nationally Determined Contributions (NDC).
- **Operational Plants:** Various cities like Indore, Pune, Ambala, Chennai, Varanasi, Surat, Tirupati, Visakhapatnam, and Hyderabad already have operational CBG and Waste to Electricity plants.
 - ✓ The plant in **Pimpri Chinchwad generates 14 MW electricity per day** from 700 tons per day (TPD) of dry waste.
- **Bio-CNG Plant in Indore:** Indore hosts the **largest Bio-CNG plant in Asia**, processing 550 metric TPD, producing 17,000 kg of biogas and 100 tonnes of compost daily.
- **Innovative Projects:** The **Bowenpally Vegetable Market in Hyderabad** is known for its innovative waste project, generating bioelectricity, biofuel, and biomanure.
- **GOBARDhan Initiative:**
 - ✓ **Initiative Launch:** The GOBARDhan Initiative was launched in **2018.**
 - ✓ **Full Form:** GOBARDhan stands for **Galvanizing Organic Bio-Agro Resources Dhan.**
 - ✓ **Aim:** The primary goal is to convert waste into wealth, promoting a circular economy.
 - ✓ **Nodal Ministry:** The Department of Drinking Water and Sanitation, **Ministry of Jal Shakti**, oversees the GOBARDhan Initiative.
 - ✓ **Part of Swachh Bharat Mission:** It operates as part of **Swachh Bharat Mission (Gramin) Phase II under Solid Waste Management.**
 - ✓ **Objectives:**
 - Safely **manage cattle and agricultural waste** in villages, enhancing cleanliness.
 - Convert **organic waste into biogas** and organic manure for rural use.
 - Promote **environmental sanitation** and **control vector-borne diseases** in rural areas.
 - Create **rural employment and income generation** opportunities by involving entrepreneurs, SHGs, and youth groups in setting up GOBARDhan units.
 - ✓ **Financial Incentive:** The government provides technical assistance and financial **support of up to 50 lakhs per district** for the safe disposal of cattle and organic waste.
 - ✓ **Budget 2023-24 Announcement:**
 - In the fiscal year 2023-24, the initiative aims to **establish 500 new 'waste-to-wealth' plants.**
 - This includes **200 compressed biogas (CBG) plants**, with support from the private sector and stakeholder Ministries/Departments.
 - The distribution **comprises 75 plants in urban areas and 300 community or cluster-based plants.**



Face to Face Centres

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1 December, 2023

Exit and Opinion Polls

Context: The recent assembly elections in Rajasthan, Madhya Pradesh, Telangana, Mizoram and Chhattisgarh have brought the concept of opinion polls and exit polls in news.

➤ Exit Polls:

- ✓ **Definition:** Exit polls involve asking voters about their political party preference after casting their votes, conducted through face-to-face or online surveys.
- ✓ **Historical Origin:** The concept was introduced during the 1957 2nd Lok Sabha elections when the Indian Institute of Public Opinion conducted the first exit poll.
- ✓ **Conducted By:** Various organizations typically collaborate with media outlets to conduct exit polls.
- ✓ **Distinguishing from Opinion Polls:** Exit polls are post-voting surveys, whereas opinion polls are conducted before elections.
- ✓ **Exit Poll Rules:**
 - In 1998, the **Election Commission of India (ECI)** issued guidelines under **Article 324** of the Constitution, limiting media from publishing poll results during a prohibited period.
 - In 1999, the **Supreme Court clarified** that without **statutory sanction**, the ECI cannot enforce guidelines restricting such polls.
 - **Section 126(A)** was introduced in the **Representation of the People Act, 1951**, in 2010, imposing restrictions specifically on exit polls.
 - **Section 126(A)** prohibits the conduct, publication, or publicizing of exit polls through print or electronic media during a period notified by the ECI.
 - Violation of Section 126(A) can result in **imprisonment for up to 2 years, a fine, or both**.
 - Currently, **exit polls can only be telecast after the conclusion of the last phase** of the election.
- ✓ **Parameters for Accurate Exit Polls:**
 - Large and diverse sample size.
 - A well-constructed questionnaire devoid of bias.

➤ Opinion Polls

- ✓ **Definition:** Opinion polls function as surveys or inquiries designed to scientifically and impartially measure public opinion on specific issues.
- ✓ **Usage in Election Outcomes:** Opinion polls gained significant recognition for predicting election outcomes in India.
- ✓ **Common Practice:** In many democracies, both opinion polls and exit polls are routinely conducted during elections.
- ✓ **Conducting Opinion Polls:**
 - Interviewers or reporters pose questions to randomly chosen individuals from the population under examination.
 - Responses are collected, and interpretations are drawn based on the obtained results.
 - Ensuring a random sample is crucial to grant every individual in the studied population an equal chance of participation.
 - This approach avoids bias, ensuring the results are representative of the entire population.

6 planets found in Orbital Resonance

Context: Astronomers have identified a rare occurrence in a nearby star system: six planets orbiting their central star in unprecedented orbital resonance, marking the first discovery of such a phenomenon in history.

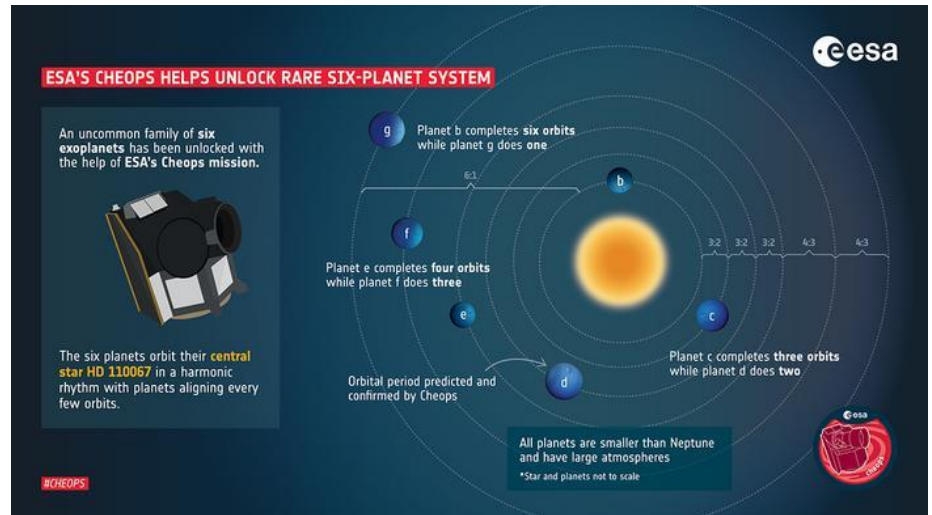
- Six planets **orbit the star HD110067**, located **around 100 light-years away** in the Coma Berenices constellation.
- **NASA's TESS** detected the star's brightness dips in 2020, indicating planets passing in front of it.
- Data from TESS and **ESA's Cheops** revealed a unique planetary configuration not seen before.
- Multiplanet systems are common, but those in **tight gravitational resonance formations are rare**.

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- The **four inner planets** show a **3/2 resonance**, while the **two outermost planets** exhibit a **4/3 resonance** pattern.
- Orbitally resonant systems **provide insights into planetary system formation and evolution**.
- Planets around stars often form in resonance, but **external factors can disrupt this balance**.
- Understanding orbitally resonant systems helps astronomers study the evolution of planetary systems over time.



Orbital Resonance

- ✓ Orbital resonance in celestial mechanics occurs when **orbiting bodies exert regular, periodic gravitational influence on each other**.
- ✓ This phenomenon typically arises when the orbital periods of the bodies are related by a ratio of small integers.
- ✓ **Binary resonance is the most common**, involving a pair of objects with a related orbital period ratio.
- ✓ The physical principle behind orbital resonance is akin to pushing a child on a swing, where **both the orbit and swing have natural frequencies, leading to a cumulative effect on motion**.
- ✓ Orbital resonances significantly **amplify the mutual gravitational influence** between bodies, affecting their ability to alter or constrain each other's orbits.
- ✓ In many cases, orbital resonance results in an unstable interaction, causing **bodies to exchange momentum and shift orbits** until the resonance is no longer present.
- ✓ Under certain circumstances, a resonant system can be self-correcting and stable.
- ✓ Examples include the **1:2:4 resonance among Jupiter's moons Ganymede, Europa, and Io**, and the **2:3 resonance between Neptune and Pluto**.
- ✓ **Unstable resonances with Saturn's inner moons create gaps in Saturn's rings**.
- ✓ The **special case of 1:1 resonance**, where bodies complete the same number of orbits in a given time interval, leads to the **ejection of smaller bodies from the orbits** of larger planetary system bodies.
- ✓ This process is part of the broader mechanism of **clearing the neighbourhood**, a criterion used in the current definition of a planet.

NEWS IN BETWEEN THE LINES

Anti-Submarine Warfare Crafts



Recently, Cochin Shipyard Ltd. initiated the launch of the initial three out of eight anti-submarine warfare shallow water crafts for the Navy at their premises.

About Anti-Submarine Warfare Crafts:

- Anti-submarine warfare (ASW) is a **branch of underwater warfare** that uses surface **warships, aircraft** or submarines to find, **track** and **destroy** enemy submarines.
- The goal of the Anti-Submarine Warfare program is to improve the Navy's ability to conduct ASW.
- The ASW shallow water crafts named **INS Mahe, INS Malvan** and **INS Mangrol**.
- These crafts, part of the **Mahe class**, aim to replace the existing **Abhay class ASW** corvettes and are specifically designed for anti-submarine operations, mine laying, sub-surface surveillance and low-intensity maritime missions in coastal waters.

Face to Face Centres



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	➤ Each craft is equipped with light-weight torpedoes, ASW rockets, mines, a close-in weapon system (30 mm gun) and 12.7 mm stabilised remote control guns. ➤ They have a speed capability of up to 25 knots (approx. 45 kmph) and an endurance of 1,800 nautical miles. ➤ These vessels are 78m long, 11.36m wide, have a draught of 2.7m, and a displacement of 896 tonnes. ➤ Each vessel would carry 57 personnel, including seven naval officers..
XPoSat Mission 	Recently, the Indian Space Research Organisation (ISRO) plans to launch its first X-ray Polarimeter Satellite (XPoSat) to explore the polarization of intense X-ray sources. About XPoSat Mission: ➤ The X-ray Polarimeter Satellite (XPoSat) is a mission that studies the dynamics of bright astronomical X-ray sources in extreme conditions. ➤ It is India's first polarimetry mission and the world's second. ➤ The satellite will launch via the Polar Satellite Launch Vehicle from the Satish Dhawan Space Centre, Sriharikota. ➤ XPoSat operates from a low Earth orbit at 650 km altitude and carries two scientific payloads for simultaneous study of temporal, spectral, and polarization aspects of bright X-ray sources. ➤ It aims to measure X-ray polarization in the 8-30 keV energy band and conduct long-term studies of cosmic X-ray sources in the 0.8-15 keV band. ➤ Primary Payload (POLIX) measures polarimetry parameters (8-30 keV) and was developed by the Raman Research Institute, Bengaluru, with ISRO support. ➤ Secondary Payload (XSPECT) provides spectroscopic data (0.8-15 keV) and was developed by the U.R. Rao Satellite Centre, ISRO.
Place in News Golan Heights 	Recently, India supported a UN resolution expressing concern over Israel's non-withdrawal from the Golan Heights. About Golan Heights: Location: ➤ The Golan Heights is a rocky plateau in south-western Syria. ➤ It's about 1,200 square kilometers and overlooks Lebanon, Syria and the Jordan Valley. Boundaries: It is bordered by the Jordan River and the Sea of Galilee to the west, Mount Hermon to the north, the seasonal Wadi Al-Ruqqād River to the east and the Yarmūk River to the south. Historical Context: ➤ It was captured by Israel from Syria during the closing stages of the 1967 Six-Day War, prompting Syrian Arab inhabitants to flee. ➤ An armistice line led to Israeli military control and settlements in the Golan. ➤ Syria attempted to regain the territory in the 1973 Middle East war, but an armistice was signed in 1974 with a UN observer force deployed along the ceasefire line. ➤ Unilateral annexation of the Golan Heights by Israel in 1981, with more than 30 Israeli settlements established, deemed illegal by international law.
Place in News Lithuania 	Recently, India and Lithuania held a meeting to strengthen maritime bilateral relations. Lithuanina (Capital: Vilnius) Location: Situated in northeastern Europe, Lithuania is the southernmost and largest among the Baltic states, other two are Estonia and Latvia. Boundaries: Lithuania is bordered by Latvia to the north, Belarus to the east and south, Poland to the south and Russia to the southwest. Physical Features: ➤ The Nemunas River is a significant waterway within Lithuania. ➤ Lake Drūkšiai is the country's largest lake. ➤ The summit of Aukštojas Hill marks the highest elevation in Lithuania.

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1 December, 2023

Personality in News

Lalithambika



Recently, V. R. Lalithambika, has received France's highest civilian honor for her outstanding contributions to space cooperation initiatives between India and France.

Lalithambika (Born: 1962)

- Dr. V.R. Lalithambika is an Indian **scientist, writer and engineer** who works for the Indian Space Research Organisation (ISRO).
- She joined ISRO's Vikram Sarabhai Space Center in **1988** as a launch vehicle autopilot design engineer.

Contributions:

- She played a crucial role in fostering collaboration between ISRO and the **French National Space Agency CNES**.
- In **2018**, she led the **Gaganyaan mission** to send Indian astronauts to space by **2022**.
- She also coordinated with the French National Space Agency (CNES) for the Gaganyaan project.
- She served as the **first director** of the Human Spaceflight Programme at ISRO.

Awards and Honors:

- She was awarded with the Space Gold Medal in **2001**, ISRO Individual Merit Award and ISRO Performance Excellence Award in **2013**.
- She also honored by the **Astronautical Society of India** for her outstanding work in launch vehicle technology.

POINTS TO PONDER

1. Which fund has been cleared on the first day of COP-28 summit? - **Loss and Damage Fund**
2. Which type of light exposure from screens can affect skin health by potentially causing premature skin aging or pigmentation, while also influencing the circadian rhythm? - **Blue light**
3. Where was the Comet P12/Pons-Brooks recently photographed? - **Astronomical Observatory in Hanle, Ladakh**
4. How many states and Union Territories will be covered under the PM-JANMAN initiative? - **18 states and 1 Union Territory**
5. When was the United National Liberation Front (UNLF) formed? - **November 24, 1964**

Face to Face Centres

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