



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.

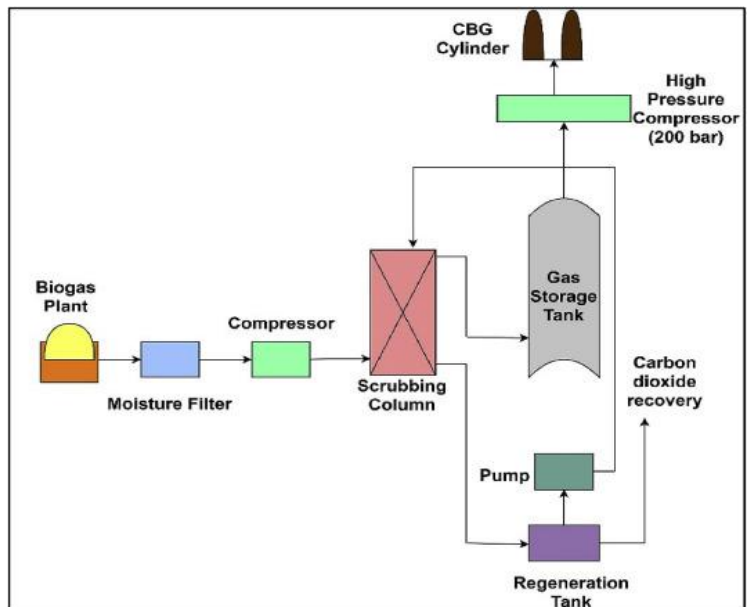
- **Partnerships:** The conference is in collaboration with **GIZ, Circular Waste Solutions, and UNIDO.**
- **GOBARDhan Initiative:**
  - ✓ GOBARDhan is a Government of India initiative aiming to **convert waste into wealth.**
  - ✓ It seeks to establish **Biogas/Compressed Biogas (CBG)/Bio-Compressed 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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## 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**.

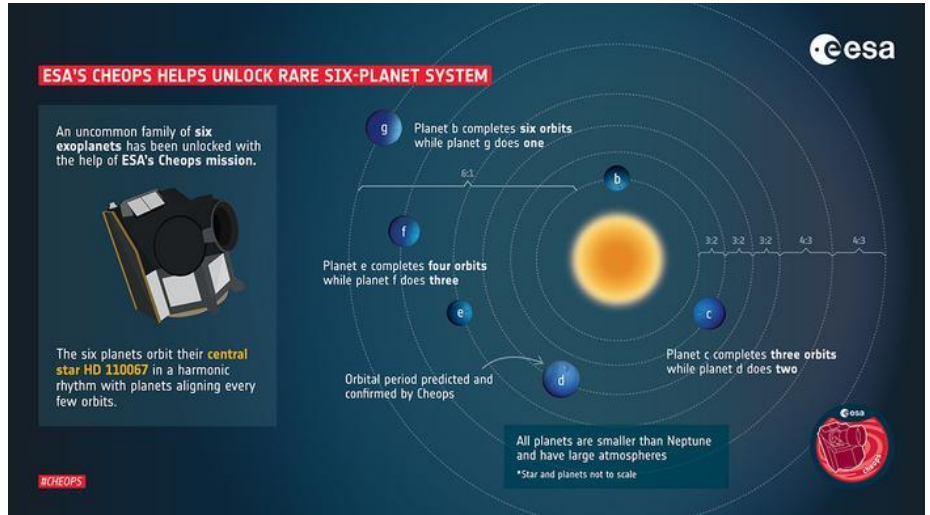
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- The four inner planets show a 3/2 resonance, while the two outermost planets exhibit a 4/3 resonance pattern.
- Orbitally resonant systems provide insights into planetary system formation and evolution.
- Planets around stars often form in resonance, 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.

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	<ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ They have a speed capability of up to <b>25 knots (approx. 45 kmph)</b> and an endurance of <b>1,800 nautical miles</b>.</li> <li>➤ These vessels are <b>78m long, 11.36m wide</b>, have a draught of 2.7m, and a displacement of 896 tonnes.</li> <li>➤ Each vessel would carry 57 personnel, including seven naval officers..</li> </ul>
<p><b>XPoSat Mission</b></p> 	<p>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.</p> <p><b>About XPoSat Mission:</b></p> <ul style="list-style-type: none"> <li>➤ The <b>X-ray Polarimeter Satellite (XPoSat)</b> is a mission that studies the dynamics of bright astronomical X-ray sources in extreme conditions.</li> <li>➤ It is <b>India's first polarimetry mission</b> and the <b>world's second</b>.</li> <li>➤ The satellite will launch via the Polar Satellite Launch Vehicle from the <b>Satish Dhawan Space Centre, Sriharikota</b>.</li> <li>➤ 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.</li> <li>➤ It aims to measure X-ray polarization in the <b>8-30 keV energy band</b> and conduct long-term studies of cosmic X-ray sources in the 0.8-15 keV band.</li> <li>➤ <b>Primary Payload (POLIX)</b> measures polarimetry parameters (<b>8-30 keV</b>) and was developed by the Raman Research Institute, Bengaluru, with ISRO support.</li> <li>➤ <b>Secondary Payload (XSPECT)</b> provides spectroscopic data (<b>0.8-15 keV</b>) and was developed by the U.R. Rao Satellite Centre, ISRO.</li> </ul>
<p><b>Place in News</b></p> <p><b>Golan Heights</b></p> 	<p>Recently, India supported a UN resolution expressing concern over Israel's non-withdrawal from the Golan Heights.</p> <p><b>About Golan Heights:</b></p> <p><b>Location:</b></p> <ul style="list-style-type: none"> <li>➤ The Golan Heights is a <b>rocky plateau</b> in south-western <b>Syria</b>.</li> <li>➤ It's about 1,200 square kilometers and overlooks <b>Lebanon, Syria and the Jordan Valley</b>.</li> </ul> <p><b>Boundaries:</b> It is bordered by the Jordan River and the <b>Sea of Galilee</b> to the west, Mount Hermon to the north, the seasonal <b>Wadi Al-Ruqqād River</b> to the east and the Yarmūk River to the south.</p> <p><b>Historical Context:</b></p> <ul style="list-style-type: none"> <li>➤ It was captured by Israel from Syria during the closing stages of the <b>1967 Six-Day War</b>, prompting Syrian Arab inhabitants to flee.</li> <li>➤ An <b>armistice line</b> led to Israeli military control and settlements in the Golan.</li> <li>➤ Syria attempted to regain the territory in the <b>1973 Middle East war</b>, but an armistice was signed in <b>1974</b> with a UN observer force deployed along the ceasefire line.</li> <li>➤ Unilateral annexation of the Golan Heights by Israel in <b>1981</b>, with more than 30 Israeli settlements established, deemed illegal by international law.</li> </ul>
<p><b>Place in News</b></p> <p><b>Lithuania</b></p> 	<p>Recently, India and Lithuania held a meeting to strengthen maritime bilateral relations.</p> <p><b>Lithuania (Capital: Vilnius)</b></p> <p><b>Location:</b> Situated in northeastern Europe, <b>Lithuania</b> is the southernmost and largest among the <b>Baltic states, other two are Estonia and Latvia</b>.</p> <p><b>Boundaries:</b> Lithuania is bordered by Latvia to the north, Belarus to the east and south, Poland to the south and Russia to the southwest.</p> <p><b>Physical Features:</b></p> <ul style="list-style-type: none"> <li>➤ The <b>Nemunas River</b> is a significant waterway within Lithuania.</li> <li>➤ Lake <b>Drūkšiai</b> is the country's largest lake.</li> <li>➤ The summit of <b>Aukštojas Hill</b> marks the highest elevation in Lithuania.</li> </ul>

**Face to Face Centres**





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## 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**

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