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National & International News

MethaneSAT



Context:

- MethaneSAT, a satellite launched aboard a SpaceX Falcon9 rocket from California, will track and measure methane emissions globally.
- Methane is a potent greenhouse gas, the second largest contributor to global warming after carbon dioxide, responsible for 30% of global heating since the Industrial Revolution.

Why Track Methane Emissions?

- Methane is 80 times more potent at warming than carbon dioxide over a 20-year period.
- It contributes to the formation of ground-level ozone, which could contribute to one million premature deaths yearly.
- Fossil fuel operations are the main culprits, accounting for about 40% of all human-caused methane emissions.

About MethaneSAT:

- Developed by the Environmental Defense Fund (EDF) in partnership with Harvard University, the Smithsonian Astrophysical Observatory, and the New Zealand Space Agency.
- Will orbit the Earth 15 times a day, monitoring the oil and gas sector.
- Will provide data on methane emissions, their sources, and trends over time, enabling stakeholders and regulators to take action to reduce emissions.

Features of MethaneSAT:

- Equipped with a high-resolution infrared sensor and a spectrometer, it can track methane concentrations as small as three parts per billion.
- Has a wide-camera view of about 200 km by 200 km, allowing it to identify larger emitters known as "super emitters."

Bengaluru's First Driverless Metro Train

Context:

- The Bengaluru Metro Rail Corporation Limited (BMRCL) has received the first set of six train coaches for its under-construction yellow line.



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- These coaches are part of the **Communication-based Train Control (CBTC)** system, enabling driverless operations.

### What is a CBTC-enabled Driverless Metro Train?

- Utilizes **Communication-based Train Control (CBTC)** technology.
- Relies on radio communication for precise train control.
- Enables trains to communicate with each other.
- **Unattended Train Operations (UTO) automate tasks like door operations and train movement.**
- Enhanced Supervision Capability from the **Operations Control Centre (OCC)** ensures effective monitoring and management of train operations.

### Manufacturing and Design:

- Manufactured by **CRRC Nanjing Puzhen Co Ltd, China**, in collaboration with **Titagarh Rail Systems Ltd., India**.
- Part of the **Make In India Initiative**.
- A contract worth **Rs 1,578 crore** for 216 coaches was secured in 2019.

### AI Integration:

- AI technology enhances **safety operations on the new line.**
- AI algorithms monitor tracks for anomalies using sensor data.
- Cameras on trains capture visual data for real-time analysis of safety concerns.
- Aims to improve track maintenance and ensure safe operations.

### Special Features:

- Hot axle detection system monitors train bearings for overheating.
- Real-time location displays door status and arrival/departure information.
- Front and rear-view cameras aid in monitoring boarding and deboarding.
- **Emergency Egress Device (EED)** allows passengers to request assistance during emergencies.

### Operation and Timeline:

- Initially, the train will have a train operator for at **least six months** before transitioning to fully driverless operations.



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- Revenue operations will start with **seven trains running at a 15-minute frequency**.
- Operational delays have pushed the expected commencement to December 2024.
- Delays are primarily due to slow manufacturing and testing processes.

### India, four-nation EFTA bloc likely to ink FTA on March 10



#### Context:

- India and the **four-nation European Free Trade Association (EFTA)**, which includes **Switzerland, Finland, Norway and Liechtenstein**, is likely to sign a long-negotiated **free trade agreement on March 10**, aimed at increasing trade and investment flows, job creation and economic growth, according to multiple sources.

#### Key points:

- The **proposed India-EFTA Trade and Economic Partnership Agreement (TEPA)** is expected to lead to **investments worth \$100 billion** from the four-country bloc into India over the next 15 years generating an **estimated one million jobs**, officials said.
- Notably, this FTA marks the **first instance where India secures commitments on investment and employment from partner nations**.
- Officials anticipate that the pact will help address India's significant trade deficit with the EFTA bloc.

### Revision in PM Surya Ghar Muft Bijli Yojana and Its Implementation



PM Surya Ghar: Muft Bijli Yojana - Lighting Up India with Solar Energy

#### Context:

The Union government has modified the ₹75,000-crore PM Surya Ghar Muft Bijli Yojana, also known as the rooftop solar: free electricity scheme.

#### Key points:

- **Initially intended to fully subsidize 1 kW-3 kW solar systems in one crore households**, the scheme now **contributes up to 60% of the installation costs**.
- Interested households must now **bear the remaining cost, with a minimum payment of ₹20,000**, which can be mitigated through a low-interest, collateral-free loan.
- **Eligibility criteria include suitable roof conditions and an existing grid connection**. Consumers are still responsible for paying for the net power supplied and consumed via the grid.
- Net-metering allows unused solar power to flow back into the grid, offsetting the household's electricity bill.



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- Twelve public sector banks offer collateral-free loans at 1% above the prevailing RBI repo rate to eligible households.
- A 3 kW-hour system can generate up to 300 units per month, with a maximum subsidy of ₹78,000 available.
- Currently, the cost of a rooftop solar system is around ₹50,000 per kW.
- Households can either pay the remaining balance or opt for a loan, with installation and maintenance costs factored in.
- Over 40 lakh registrations have already been received, with installations underway in Gujarat. The target is to reach one crore houses within three years.

**Union Minister Anurag Singh Thakur Announces Two NCoE for Women**

**Context:**

Union Minister for Youth Affairs and Sports, Shri Anurag Singh Thakur, has **declared the establishment of two National Centres of Excellence (NCOEs) for women in honor of International Women's Day.**

**Key points:**

- These NCOEs will focus on **23 disciplines prioritized for medal-winning potential in global competitions like the Asian Games and the Olympics.**
- Shri Thakur, addressing the lack of trainers, coaches, and infrastructure at the state level, emphasized the **importance of national support for sports development.**
- **Collaboration between the Central government and state authorities is underway to identify key sports and allocate resources accordingly, ensuring a strategic approach to promoting sports like hockey, boxing, and athletics.**
- Efforts are being made to strengthen existing NCOEs and enhance coaching quality in collaboration with national sports federations.
- **The Sports Authority of India has established 23 NCOEs across India, equipped with advanced infrastructure, sports science facilities, personalized nutrition plans, and expert coaching staff to nurture promising athletes.**

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