PSLV puts 7 satellites in orbit; four more missions this year

The primary satellite DS-SAR was sponsored by the Government of Singapore; to reduce space debris, PS4 stage brought to a lower orbit so that it re-enters atmosphere in less than two months

The Hindu Bureau
BENGALURU

The Indian Space Research Organisation (ISRO) on Sunday successfully launched the PSLV-C56 carrying Singapore's DS-SAR and six other satellites.

The rocket lifted off from the Satish Dhawan Space Centre in Sriharikota at 6.31 a.m.

"PSLV-C56 carrying seven satellites including the primary satellite DS-SAR and six co-passengers has been successfully placed in the right orbit. This is a PSLV mission for New Space India Limited [NSIL] and I want to congratulate the customers sponsored by the Government of Singapore for having this mission onboard PSLV and their continued faith in our launch vehicle for deploying their spacecraft," ISRO Chairman S. Somnath said.

The DS-SAR satellite is developed under a partnership between the DSTA (representing the Government of Singapore) and ST Engineering.

Co-passengers
The co-passengers on the missions were VELOX-AM, a 23-kg technology demonstration microsatellite; At-

Mission success: The ISRO's PSLV-C56, carrying Singapore's DS-SAR satellite and six other satellites, lifts off from the Satish Dhawan Space Centre in Sriharikota on Sunday. PTI

mospheric Coupling and Dynamics Explorer (ARCADE), an experimental satellite; SCOOB-II, a 3U nanosatellite flying a technology demonstrator payload; NuLIoN by NuSpace, an advanced 3U nanosatellite enabling seamless IoT connectivity in both urban and remote locations; Galassia-2, a 3U nanosatellite that will be orbiting on a low-earth orbit; and ORB-I2 STRIDER, a satellite developed under an international collaboration.

After the launcher placed all the seven satellites into a 535-km circular orbit, the PS4 stage was brought back to a lower orbit of 295 km x 300 km.

"The stage is purposefully manoeuvred to a 295 km x 300 km orbit. It now spends significantly less time in space, reducing its duration from over two decades to less than two months, before re-entering the earth's atmosphere.

"ISRO and India remain committed to reduced space debris and sustainable use of space for the benefit of all," the space agency said after the PS4 stage de-orbiting experiment.

Mr. Somnath said ISRO was set to launch four more missions this year which included another PSLV mission in August or early September.

Metro plans to operate more electric vehicles to boost last-mile connectivity

Chennai Metro Rail Ltd. is now planning to introduce these services at more stations, encouraged by the response to the launch of electric autorickshaw and minibus services from select stations in the last couple of weeks, especially from Thirumangalam and airport

The Hindu Bureau
CHENNAI

Chennai Metro Rail plans to bring in more electric vehicles to several stations to boost its last-mile connectivity.

Though this plan has been in the pipeline for a long time now, it is likely that it will finally become a reality.

According to officials of Chennai Metro Rail Ltd. (CMRL), after a surge in the number of travellers in the past couple of weeks after introducing electric autorickshaws and minibuses in select stations, they have become more serious about adding last-mile connectivity vehicles now.

"We want to operate the last-mile connectivity ourselves. Though we do run

Clean transport: A team of Chennai Metro Rail Ltd. is working on a plan to scale up its last-mile connectivity services by strengthening its fleet of electric and share autorickshaws. B. VELANKANNI RAJ

limited number of electric autorickshaws now, we are mulling doing this on a larger scale and have a combination of both electric and share autorickshaws. Our team is working on a plan. Though permit is not needed for a low-capacity electric vehicle, we need registration and other approvals. We are in discussion with the government to get necessary approvals to launch this project," an official said.

Little Mount, Alandur, Thirumangalam, Chennai airport, Tiruvottiyur, Go-

> Though permit is not needed for a low-capacity EV, we need registration and other approvals
>
> **AN OFFICIAL OF CMRL**

vernment Estate, Koyambedu and Shenoy Nagar are some of the stations from where the Metropolitan Transport Corporation (MTC) operates minibuses. Out of all these stations, buses operated from Thirumangalam and Chennai airport are running packed during peak hours and commuters say there is a need to strengthen the fleet of buses and autorickshaws from the two stations.

Biomining at Perungudi showing results, Corporation aims to complete it in one year

Of the 225-acre garbage dump at Perungudi, about 100 acres of land has been reclaimed, says Corporation official; about two lakh tonnes of refuse-derived fuel from Perungudi has been sent to cement factories; the civic body plans to set up integrated waste processing complex at Kodungaiyur

CITY MATTERS

Malavika Ramakrishnan
CHENNAI

The Greater Chennai Corporation aims to complete the biomining of legacy waste at Perungudi garbage dump by June 2024 as over 70% of the work has been completed.

Over four decades, the dump yard had accumulated around 35 lakh tonnes of waste. According to Geo Dhamin of Poovulagin Nanabargal, biomining is the only way to reclaim acres of land filled with unsegregated waste.

According to an official, 100 acres out of 225 acres of land at the dump yard have been reclaimed.

The entire project was divided into six packages estimated at ₹350 crore. Biomining reduces the carbon dioxide emission every year and will produce refuse-derived fuel (RDF) as an alternative to coal in

An uphill task: The Greater Chennai Corporation has been making good progress in biomining of legacy waste at Perungudi. But the daily arrival of huge quantum of unsegregated waste is becoming problematic. M. KARUNAKARAN

cement factories.

Corporation's Chief Engineer (Solid Waste Management) N. Mahesan says that 2 lakh tonnes of RDF has been sent to cement factories so far with the civic body bearing cost of transportation.

"Our priority is to reduce the amount of legacy waste and it is the responsibility of the Corporation to reclaim the land," he says.

Similarly, the project of biomining of legacy waste at Kodungaiyur has been divided into six packages at an estimate of ₹640 crore to process 65 lakh tonnes of waste, almost double

the quantum of waste handled at Perungudi. A tender is expected to be called on August 11 for the same.

However, the problem of daily arrival of waste poses a challenge to the biomining effort in both the dump yards. The city generates about 5,500 tonnes of waste every day

with one of the two dump yards as the final destination. This implies a never-ending cycle of biomining. "The entry of unsegregated waste continues and the cycle will not end", says Mr. Dhamin.

Centralised segregation
S. Kumararaja, an activist who has been fighting to save the Pallikarnai marshlands for the past 20 years, says centralised segregation is the problem. "If segregation is done at the zonal or ward level, then it will reduce the pressure on biomining and reduce the quantum of waste dumped.

Sometimes, segregation happens at burial grounds, which is highly disrespectful [to the sentiments of the people]. The Corporation has extensive open space reserve lands that can be used for this purpose," he says. The problem exists due to lack of strict enforcement, which is slowly being rectified now.

Manure is one of the products of biomining which the Corporation is selling but is also using for its own purposes.

According to an official, the manure produced out of the waste has to be tested for toxicity.

"The manure is used in medians on bus route roads where we want to raise small plants and flowers to beautify the city," says the official. It is used around the overhead Metro Rail stations to grow plants.

"Producing manure from the waste is wrong because it comes from waste dumped over decades, which could be toxic," says Mr. Dhamin.

The Corporation has big plans to transform Kodungaiyur garbage dump by constructing an integrated waste-to-energy plant and an automated material recovery facility.

A Miyawaki forest covering 150 acres of Perungudi is also planned, says an official.

Unnatural find: The skeleton of a whale found in a shed of a private farm in Kasaragod. SPECIAL ARRANGEMENT

15-year-old skeleton of whale found on Kerala private farm

The Hindu Bureau
KASARAGOD

The Forest Department has seized the skeleton of a whale that was kept in a shed at a private farm at Kanwatheertha in Manjeswaram in Kasaragod.

According to District Forest Officer K. Ashraf, the farm belongs to 75-year-old Riskin, who is a native of Chikkamagaluru. The skeleton has been well maintained and placed in the shed for the past 15 years.

Mr. Ashraf said that the person got the skeleton from a fisherman. He bought it in 2007 and constructed a shed for ₹27,000. The skeleton has been taken in possession by the Forest Department.

Since there is no place to preserve the skeleton, it has been kept at the farm.

Following orders from higher-ups, it will be moved to a safe place, he added.

Mr. Ashraf said that there are 16 whales mentioned in the Wildlife Protection Act (WPA) and it will require a scientific analysis to ascertain the details of the skeleton. A case has been charged and the skeleton will be sent for DNA testing. Further action will be taken after the test results.

Mr. Ashraf said that under Section 49 of the WPA, no person shall purchase, receive or acquire any captive animal, wild animal, other than vermin, or any animal article, trophy, uncured trophy or meat derived therefrom otherwise than from a dealer or from a person authorised to sell or transfer the same under this Act.

A gender paradox in Tamil Nadu

Women are likely to be educated but also likely to receive lower pay than men

STATE OF PLAY

Kalaiyarasan A.

Women's participation in the Tamil Nadu economy presents a paradoxical picture. A woman in Tamil Nadu is likely to be educated, to work, and to find work in a modern sector of the economy. But she is also likely to be paid far lower than men for the same work, and experience segregation in the workplace. While state interventions towards women's welfare – free transportation and populist schemes – seek to overcome supply side constraints, the decadal fall in female labour participation in the State is driven mainly by the demand side, i.e., a lack of gainful employment. Tamil Nadu needs to match its supply side interventions by creating employment for women in emerging sectors.

In Tamil Nadu, thanks to state interventions and century-old social mobilisation, the share of women in the workforce is higher than the national average and most of the States. As per the NSSO-PLFS data for 2020-21, women's participation was about 43% in the State as compared to 32.5% for all of India. Yet, by international standards, women's participation in work is low. Women's participation in the labour force was at its peak (54%) in 1993-94 in the State, but came down to 51% in 2004-05 and has only been declining since then. It was at its lowest (34%) in 2017-18. It jumped to 43% in 2020-21, but this should not be seen as a necessarily positive development as the increased participation was mainly in agriculture. This was likely a response to the pandemic-induced distress, which may have drawn more women into the workforce to supplement household incomes.

Modern sectors in Tamil Nadu employ a larger proportion of women workers compared to most States. Women's participation in service and manufacturing is 58% compared to 39% for Gujarat and Maharashtra and the all-India average of 37%. This sectoral shift from agriculture for women workers in Tamil Nadu is significant given the larger national trend towards feminisation within agriculture. About 28% of the women identified as regular workers in total manufacturing in India are located in Tamil Nadu, which is higher compared to other industrialised States such as Maharashtra and Gujarat that constitute 13% and 11% of the total pie. In organised manufacturing alone, the share of Tamil Nadu women is 43%. In other words, almost half the women working in manufacturing are located in the State. Similarly, about 52% of government employees in Tamil Nadu are women compared to 36% at the national level.

This achievement of women's entry into employment doesn't always guarantee inclusion since they suffer from wage discrimination. The rise of women's enrolment in education doesn't translate into commensurate employment opportunities. Men and women don't start out on an almost equal footing in access to jobs. Even if they manage to get into the job market, they suffer from occupational discrimination or wage discrimination. The gender earning gap (ratio of women's earning to men's earning) in Tamil Nadu is among the highest in the country. For instance, monthly earnings for women in regular jobs in Tamil Nadu were ₹12,969 as against ₹17,476 for men in 2020-21. Even if we take the average of four years (2018-2021), a woman employed in regular salaried work in Tamil Nadu earned 74 paise for every rupee that a man in the same job earned, as against 81 paise in Maharashtra and 85 paise in Gujarat. The average Indian woman with a regular salaried job earned 77 paise for every rupee that a man earned.

What explains this earning gap? It cannot be typical of the "human capital" differences as the literacy gap in the State is much lower as compared to many other States. It could be partly an outcome of occupational segregation as only 12% women are in white collar jobs while a substantial number of them are concentrated in semi-skilled or unskilled jobs.

The State has to recalibrate its strategies by adopting a qualitative approach. Mere expansion of schools and colleges cannot help overcome persisting gender inequality. While the ₹1,000 monthly assistance to women heads of eligible households would certainly ameliorate the precarious condition of those working in informal sectors, improving learning outcomes, upgrading skills to equip women to participate in the service sector, and strengthening the manufacturing sector may be long-term strategies.

Kalaiyarasan A. is Assistant Professor at the Madras Institute of Development Studies and Research Affiliate at the South Asia Institute, Harvard University

Two Indian military aircraft visit Australia's strategic Cocos Islands

The planes were at Cocos Island for a week, which can be an important base for refuelling and operational turnaround for Indian armed forces; India aims to increase its military-to-military engagement, deepening interoperability in the region

Dinakar Peri
NEW DELHI

Expanding the strategic reach of the Indian military and improving interoperability with Australia, an Indian Navy Dornier maritime patrol aircraft and an Indian Air Force (IAF) C-130 transport aircraft visited Australia's Cocos (Keeling) Islands (CKI) in the Southern Indian Ocean, close to Indonesia and strategic maritime choke points earlier this month, diplomatic and official sources confirmed.

"Cocos can be an important base for refuelling and operational turnaround for the Indian military, especially once the runway there is expanded to accommodate large aircraft like the P-8 long range maritime patrol aircraft," an official source said, while confirming the visit by the Dornier and C-130 aircraft. According to diplomatic sources, the aircraft were at Cocos for close to a week. Neither the Navy nor the IAF responded to questions from *The Hindu.*

In a July 7 article published by *The Strategist,* the commentary and analysis site of Canberra-based

India's access to Cocos and Christian Islands would help the Navy monitor movements in the Indian Ocean. TWITTER/@AUSAIRFORCE

think tank, the Australian Strategic Policy Institute, David Brewster and Samuel Bashfield wrote that this week, several aircraft from the Indian Navy and the IAF made a "groundbreaking visit" to Australia's CKI.

"This week's visit by Indian Navy Dornier maritime patrol aircraft and a C-130 Hercules from the IAF effectively elevates the Cocos Islands as a staging point for Australian and Indian air surveillance of the maritime choke points through Southeast Asia and the entire eastern Indian Ocean," they wrote in the article titled 'Indian air-

craft visit Cocos Islands as Australia strengthens its maritime security network'. "The visit represents an important step in the bilateral relationship as the two countries increasingly give each other access to their military facilities in the Indian Ocean," they added.

This is the latest in a series of India's growing military-to-military engagements, deepening interoperability broadly in the region and especially with Australia. In February, in another first, an Indian Navy Kilo class conventional submarine, *INS Sindhukesari,* which was

on operational deployment, travelled through the Sunda Strait and docked in Jakarta, Indonesia for operational turnaround.

Even before the Indian military reached there, Cocos Islands had been a point of cooperation between the space agencies of the two countries for India's Gaganyaan human space flight mission. Australia's active support in establishing a temporary ground station at CKI for the Gaganyaan missions, and potential opportunities for cooperation in earth observation, satellite navigation, space situational awareness, weather and climate studies using satellite data, were the highlights of the discussion, an Indian Space Research Organisation (ISRO) statement had said during the visit of Enrico Palermo, head of the Australian Space Agency (ASA) to the ISRO's headquarters in September 2022.

According to reports in the Australian media, the Australian Defence Force's (ADF) plans to upgrade the runway for handling larger military aircraft to use as a forward operating base

have been delayed by a significant escalation in the cost of the proposed plan.

According to the ADF, due to insufficient length and strength of the existing airfield pavement at CKI, large defence aircraft are unable to operate out of there. "Subject to Parliamentary approval, works are expected to commence in late 2023, with construction to commence in late 2024. All works are forecast to be complete by early 2026," the ADF website states on the proposed expansion. The scope of the project has been increased to include a 150-metre runway extension and additional supporting infrastructure, according to a spokesperson of the ADF.

India's access to CKI and Christmas Island, which is even closer to the strategic choke points, has been under discussion for a while. A turnaround from either of the islands would significantly enhance the on-station time of the Indian Navy's P-8Is to monitor movements into the Indian Ocean, especially by China's People's Liberation Army Navy, whose forays into the region have significantly gone up in recent years.

What is Sam Altman's biometric project?

What is the Worldcoin project? How is ChatGPT-maker OpenAI related to this crypto project? Why has Worldcoin been criticised? What dangers does it pose?

Sahana Venugopal

The story so far:

On July 24, OpenAI CEO Sam Altman took to Twitter to formally re-introduce Worldcoin, a project of his that was eclipsed by the popularity of ChatGPT. The Worldcoin venture runs on a simple model: allow your eyes to be scanned in order to prove your human uniqueness, and receive some crypto and an ID (called a World ID) in exchange. Worldcoin claims it is building the "world's largest identity and financial public network" open to people worldwide.

What is Worldcoin?

Worldcoin is an initiative to create a digital network in which everyone can claim some kind of stake, and join the digital economy. Using a device called "Orb," Worldcoin volunteers known as 'Orb operators' scan a person's iris pattern to collect their biometric data and help them get a World ID through the World app.

How does Worldcoin work?

The users need to be willing to scan irises and/or get their own irises scanned. Volunteers sign up to be "Orb operators" in their locality and receive basic training and a biometric device with which to scan irises. Orb operators can even rent out the Orb to others to let them scan eyeballs as well. Those who have their irises scanned and collect a World ID can use this to claim the WLD crypto, which they may use for transactions or hold on to the asset in the hope that its price might rise, as it did after launching. However, users can also buy or sell WLD without getting scanned or using the app. In return for signing up more people to the Worldcoin network, Orb operators get WLD, which is a token based on the Ethereum blockchain. Ethereum has a native coin, Ether, which is the second-largest crypto by market capitalisation. However, anyone can create a token which runs on the Ethereum blockchain. WLD is one such cryptocurrency.

Why does Worldcoin scan irises?

In a company blog post, Worldcoin explained that it wanted to include everyone in its network and that using biometric information to avoid duplication was a valid method for this. The company claimed that India had "proven the effectiveness of biometrics" through its Aadhaar system. Worldcoin notes that Aadhaar IDs stopped people from signing up multiple times to benefit from social welfare schemes.

The company said on its official Twitter account that it uses a technology known as zero-knowledge proofs (ZKPs) to maintain users' privacy. Worldcoin has also said it is fully compliant with Europe's General Data Protection Regulation (GDPR).

"Individuals who want to receive a World ID are not required to share their name, phone number, email address, or home address. Images collected by the Orb are used to generate a unique iris code. By default these images are immediately deleted once the iris code is created, unless the user opts in to Data Custody," said Worldcoin on its website.

Was Worldcoin criticised?

Worldcoin was criticised long before its re-launch. NSA whistleblower Edward Snowden pointed out that even if a person's biometric scans were deleted for privacy reasons – as Worldcoin said it would do – the unique identifier for the scan would match future scans of the same person's eyes.

Has Worldcoin come to India?

According to the company website, it has. Worldcoin lists 18 locations, largely in Delhi, Noida, and Bangalore, where Orb operators are scanning people's eyes. Some locations include popular malls and metro stations in these cities.

THE GIST

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OpenAI CEO Sam Altman formally re-introduceD Worldcoin, a project of his that was eclipsed by the popularity of ChatGPT.

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The users need to be willing to scan irises and/or get their own irises scanned. Volunteers sign up to be "Orb operators" in their locality and receive basic training and a biometric device with which to scan irises.

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Those who have their irises scanned can collect a World ID and could be used to claim the WLD crypto for transactions.