

# Betting big on the global satellite market

Despite its initial failure, the SSLV could bump up India's share of the international space economy to 10%, reports Shine Jacob

**T**hough the first demonstration flight of India's Small Satellite Launch Vehicle (SSLV) to put into orbit an earth observation satellite (EOS2) and AzaadiSAT (a micro satellite created by 750 rural students from across the country) earlier this month was a failure, the project will likely be a game-changer in determining India's future in the global satellite market.

At present, there are around 4,550 man-made satellites in Earth's orbit, including 3,790 in lower orbit, 139 in medium orbit, 56 in highly elliptical orbit and 565 in geostationary orbit. If the current satellite plans of global majors become a reality, another 50,000 satellites are expected to be launched within 10 years. It is this rising interest in space that makes India's SSLV relevant.

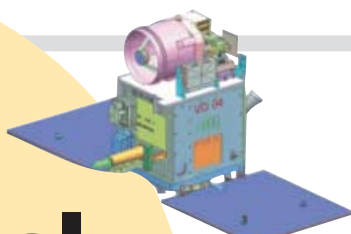
Based on government estimates, India's share in the global space economy of \$360 billion is around 2 per cent, which, experts say, can be increased to over 10 per cent with the SSLV. The Indian Space Research Organisation (Isro) has already said that it is likely to come out with the SSLV-D2 soon.

"The advantage of SSLV is related to commercialisation of satellites," says M C Dathan, scientific advisor to Kerala Chief Minister Pinarayi Vijayan, and a former director of Isro's Vikram Sarabhai Space Centre. "There are a lot of countries having no launcher or launch vehicle, which are dependent on other countries for launching satellites for different social purposes like remote sensing, communication, and technology."

The ₹56-crore SSLV rocket can carry satellites weighing around 500 kg. So far, the government has approved ₹169 crore for the three units at the development stage of the SSLV. "We have got good orders for the PSLV (Polar Satellite Launch Vehicle), as it was comparatively less costly and reliable. Even now, a lot of orders are pending. Through the SSLV, this cost comes down by about 60 per cent," Dathan adds.

## Why SSLV's maiden mission failed

This is not the first time that ISRO is betting big on small



launch vehicles. In the 1980s, it had tried its luck with the Augmented Satellite Launch Vehicle (ASLV), but it did not work as expected.

Experts like Dathan argue that the recent launch was over 90 per cent successful, since the rocket worked as it was expected to — all the phases were successful and all the propulsion systems worked. The only issue was a sensor failure; the computer determined that the accelerometer had failed due to an irregularity in it. This led to the system opting for a salvage option that directed the satellite into an incorrect orbit.

Isro said in a statement later that the SSLV-D1 had placed the satellites into a 356-km x 76-km elliptical orbit instead of a 356-km circular orbit. The issue has been reasonably identified, with the failure of logic to identify a sensor failure leading to a salvage action, it said. It is this error that Isro may be looking to correct in its second run.

"There is a need to have an affordable, dedicated launch vehicle for small satellites. The vehicle can take a 500-kg satellite to lower-earth orbit," says Sanjay Nekkanti, founder of India's first exclusively space-focused startup, Dhruva Space. "These satellites can weigh as little as 1 kg or as much as 100 kg. So essentially, the vehicle has the capability to launch even 50 or more small satellites at one go."

Industry experts reckon the use of solid propellants in the SSLV is an advantage, as costs will come down because of it.

## Where India stands

From 1999, Isro's commercial arms have earned \$56 million and 190 million euros in foreign exchange by launching satellites from 34 countries using the Polar Satellite Launch Vehicle (PSLV). Of this, around \$35 million and 10 million euros were generated between 2019 and 2021, according to government estimates. So far, the PSLV has launched 342 foreign satellites.

Data shared by Dewesoft indicates that of the 4,550 live satellites in earth's orbit, 2,804 are of US origin, followed by China (467), UK (349), Russia (168), Japan (93) and India (61). Hence, India's potential to grow in the segment is expected to be huge in the future.

"The SSLV is important, as more countries are now looking at cheaper options to launch their satellites. Even though the PSLV's first attempt was a failure, it became one of the biggest successes. The turnaround time for the SSLV is a few weeks," says Srimathy Kesan, founder and chief executive officer of Chennai-based Space Kidz India, an organisation dedicated to creating young scientists. It was Space Kidz that coordinated the AzaadiSAT project, which was part of SSLV's maiden run.

Kesan adds that the organisation expects Isro to give one more chance to the children and make them a part of the SSLV-D2, which is likely to happen in six months. Instead of 75 payloads, they want it to be 76 payloads in the next run, marking 76 years of India's independence.

"Our team includes students from all states, except Mizoram and Arunachal Pradesh. We expect to have a successful run of SSLV-D2 soon at Sriharikota and students have already started working on the next AzaadiSAT," Kesan says.

PHOTO: PTI

