



People watch a live stream of Chandrayaan-3 spacecraft's landing on the moon, inside an auditorium of Gujarat Science City in Ahmedabad, India, on August 23, 2023. (Reuters)

Chandrayaan-3 punches home India's record in frugal innovation for space flights

Reuters, Bengaluru

Published: 24 August ,2023: 03:04 PM GST

Updated: 24 August ,2023: 04:57 PM GST

When Indian space agency scientists set out to design the Chandrayaan-3 moon mission, they knew they had one more chance to make history with a landing on the lunar south pole after a failed attempt four years ago.

They also had to do it on a shoestring budget and ended up spending only 6.15 billion rupees or about \$75 million on the mission.

[For the latest headlines, follow our Google News channel online or via the app.](#)

From managing costs on rockets to developing a built-in-India supply base, the [Indian Space Research Organisation's \(ISRO\) success with the Chandrayaan-3 moon landing](#) shows how it has honed a system of doing more for less, officials, suppliers and analysts say.

ISRO's record for frugal innovation will be tested by upcoming missions, including a project to study the sun set to launch next month and a plan to put astronauts in orbit.



**0-100 km/h in 8.3
seconds**

XUV 400



Indian Space Research Organization (ISRO) scientists and engineers cheer after India's Mars orbiter successfully entered the red planet's orbit, at their Spacecraft Control Center, in this photo taken through a glass panel, in the southern Indian city of Bangalore September 24, 2014. (Reuters)

Although India's government allocated the equivalent of \$1.66 billion for the department of space for the fiscal year ending in March, it spent around 25 percent less. The budget for the current fiscal year is \$1.52 billion.

By contrast, NASA has a \$25 billion budget for the current year. Put another way, the annual increase in NASA's budget -- \$1.3 billion -- was more than what ISRO spent in total.

"No one in the world can do it like we do," said S. Somanath, ISRO chairman and a veteran aerospace engineer, who was celebrating Chandrayaan's successful touchdown on Wednesday.

"I won't disclose all secrets, otherwise everyone else (can) become cost effective," he said at a news conference.

One example of how ISRO contained costs on Chandrayaan-3: it opted to take a longer route to the moon, allowing it to use less powerful -- and cheaper -- propulsion systems. Chandrayaan-3 took more than 40 days to reach the moon, looping through wide-ening orbits to use the Earth's gravitational force as a slingshot.

By contrast, Russia's Luna-25 mission, which crashed before its own attempted landing on the moon's south pole, had been on a more direct course to the moon. Russia has not disclosed what it spent on the failed mission.

"To take a direct route takes more power, more fuel, and is far more expensive," said Somak Raychaudhury, an astrophysicist and vice chancellor of Ashoka University.

ISRO also developed some of the lander components itself, including the cameras, altimeter and hazard avoidance sensors. It used Indian suppliers for vehicle assembly, transportation, and electronics to keep costs low. And it limited the number of design prototypes to save time and money.

“With local sourcing of equipment and design elements, we are able reduce the price considerably. A similar set up by an international vendor would cost four to five times,” Amit Sharma, CEO of Tata Consulting Engineers, which was a vendor to ISRO for the Chandrayaan-3 project, told Reuters.

Stretching every rupee

Many of the ISRO scientists who worked on the failed Chandrayaan-2 attempt to land on the lunar south pole in 2019 stayed on for the current mission.

ISRO is gearing up to launch the Aditya-L1 spacecraft, a space-based solar observatory, in September. It has plans to send astronauts to space in a mission ISRO’s Somanath has said could come by 2025.

ISRO’s success is also expected to provide a lift for the country’s private-sector space start-ups at a time when Prime Minister Narendra Modi’s government is looking to open the sector to foreign investment, suppliers say.

Ankit Patel, founder and director of Ankit Fasteners, which has been supplying nuts, bolts, and other fasteners to ISRO since 1994, said there were times when parts had to be hand carried to a launchpad to meet a deadline.

“The unsung heroes of ISRO are the engineers who are pushing their suppliers every day to achieve the set timeline,” Patel told Reuters.

He added: “ISRO has been very frugal with its expenditure. ISRO needs to think out of the box to stretch every rupee.”

Read more:

[Home](#) [News](#) [Business](#) [Energy](#) [Opinion](#) [Life](#) [Video](#) [In Focus](#)

[Putin congratulates India on moon landing after Russia’s own mission crashed](#)

[Explainer: Why are space agencies racing to the moon’s south pole?](#)

Also Read



Moon rover exits India’s Chandrayaan–3 spacecraft to explore lunar surface



Putin congratulates India on moon landing after Russia’s own mission crashed



India safely lands Chandrayaan–3 spacecraft near moon’s south pole in historic moment



India eagerly counts down to second moon landing attempt after Russian lander crash



Explainer: Why are space agencies racing to the moon’s south pole?



India’s moon landing anticipation builds up after Russia’s crash

Tags