

The area of Mumbai was once a group of seven islands that were later united to form Greater Mumbai.



Maidan Mumbai

# India arrives...this time on the moon

# Chandrayaan 2

India has now become the fourth country in the world to successfully initiate a rover mission to the moon. This indigenous mission displays the technological advancements of our country. Let's take a look at all that matters in Chandrayaan-2 launch.

## The unknown

Chandrayaan-2's lander and rover are targeted for a location about 600 kilometers (375 miles) from the lunar south pole, making India the first nation to achieve this feat. The rover will explore the surface of moon for one lunar day or fourteen earth days. This will make us the first ones to see and to show to the world the darker side of the moon.



## Timeline

**July 22, 2019 at 14:43 (IST)**

GSLV MK III carrying Chandrayaan 2 spacecraft weighing 3290 kg was launched from Satish Dhawan Space Centre in Sriharikota, India. The spacecraft comprises of an orbiter, lander and a rover.

**July 22, 2019 at 14:58 (IST)**

Approximately 16 minutes after lift-off, Chandrayaan-2 separated from Geosynchronous Satellite Launch Vehicle Mark III (GSLV MK III) rocket and was successfully placed in the Geosynchronous Transfer Orbit (GTO).

## Abandoned dream

ISRO signed an agreement with Russia in 2007 to launch Chandrayaan-2 in 2013. Then Russian lander's construction was delayed after the December 2011 failure of Roscosmos' Phobos-Grunt mission to the Martian moon, Phobos. Subsequently, Russia pulled out of the agreement citing financial issues, leaving the project in limbo. Hence, what couldn't be achieved collaboratively has been achieved single handedly now.



**August 14, 2019 at 02:21 (IST)**

Three weeks after its launch, Chandrayaan 2 left the earth's orbit after completing the Trans Lunar Injection maneuver operation and is safely headed towards the moon now.

**It will reach the moon's orbit on August 20 and is expected to make a soft landing on its south pole on September 7.**

## Inexpensive brilliance

Chandrayaan-2's total cost is 978 crore INR including 603 crore INR mission cost and 375 crore INR for its launch and the GSLV MK III rocket, translating to 140 million USD. This makes Chandrayaan-2 way cheaper compared to extravagant US Apollo Missions that cost over 25 billion USD. China also spent 8.5 billion USD in its 2017 Moon Mission. This shows that our scientists worked hard enough to keep the capital investment low.



## A tribute

"When Vikram Lander would land on the moon next month, it will be a befitting tribute from 130 crore citizens of India to Dr Vikram Sarabhai."

**Narendra Modi**  
PM of India

## Woman power

This mission was led by two women scientists of Indian Space Research Organisation (ISRO). Muthayya Vanitha was leading the Chandrayaan-2 mission and Ritu Karidhal was working as mission director. It is for the first time in the history of this country that a space program of such high sensitivity is being led by female scientists and that too, to the zen of excellence.



Picture courtesy: ISRO



ISRO scientists carrying India's first communication satellite APPLE on bullock cart in 1981.

