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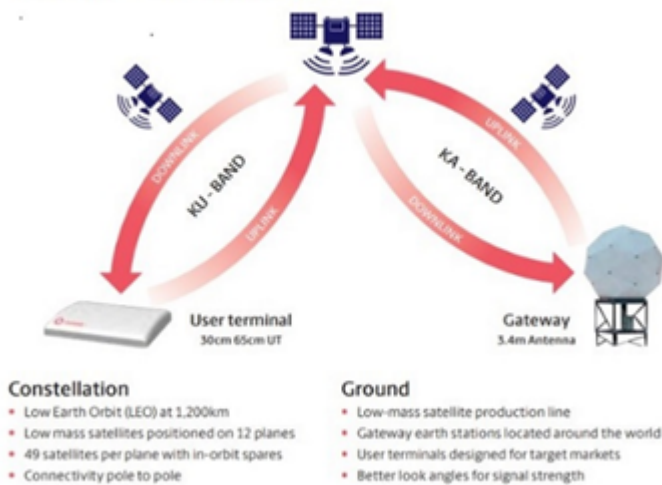
OneWeb India-1 Mission

Published On: 29-03-2023

Why is in news? Recently, the second commercial launch of the Indian Space Research Organisation's LVM-3 saw 36 OneWeb satellites placed in orbit

About OneWeb

How our connectivity works



Over several years we have remained focused on our commitment to deliver a network that will provide connectivity for our customers and communities that need it most. OneWeb's global constellation will play a pivotal role in realising this dream

One web is a global communication network powered from space, enabling connectivity for governments, businesses, and communities.

It is implementing a constellation of Low Earth Orbit (LEO) satellites. India's Bharti Enterprises serves as a major investor and shareholder in OneWeb.

This is OneWeb's 18th launch, its third this year, bringing the total of OneWeb's constellation to 618 satellites. This launch is a major milestone for the company, with the number of satellites now in-orbit enabling global service, the first LEO operator to reach this milestone.

OneWeb will soon be ready to roll out its global coverage

Role of India in OneWeb Launch

India has been concentrating on increasing its share of the global commercial space market ever since the country decided to open the space sector to private players in 2020.

It is one of the world's major space-faring nations, but it only has 2% of the commercial market at the moment.

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With 36 OneWeb satellites launched in October 2022, the heavy launch vehicle entered the commercial market.

OneWeb was initially supposed to launch its satellites through the Russian space agency. It cancelled the plan after the agency halted the launch amid the Russia-Ukraine war, seeking an assurance from the UK government-backed company that the satellites wouldn't be used against them and that the British government would sell its stake.



Europe's ArianeSpace was not viable as it had retired its workhorse Ariane5 rocket and there were significant delays with Ariane6

SpaceX, despite developing a similar satellite-based network named Starlink, launched some of the OneWeb satellites. And India, through two LVM3 launches, has put in orbit 72 OneWeb satellites.

India's rockets

India currently has three operational launch vehicles — the Polar Satellite Launch Vehicle or PSLV, of which there are multiple versions; the Geosynchronous Satellite Launch Vehicle or GSLV Mk-II; and the Launch Vehicle Mark-3 or LVM3.

The PSLV has been the most commonly used, having carried as many as 53 successful missions since 1993. Only two flights of PSLV have failed.

The GSLV-MkII rocket has been used in 14 missions, of which four have ended in failures, most recently in August last year. The LVM3 has flown five times, including the Chandrayaan 2 mission, and has never disappointed.

In addition, ISRO has been working on a reusable launch vehicle (RLV). Unlike other rockets, the RLV would not end up in space as waste. Instead, it can be brought back and refurbished for use multiple times.

Heavier rockets

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HEAVYLIFTERS



LVM3

INDIA'S HEAVIEST,
WILL ALSO BE USED
FOR GAGANYAAN

Liftoff Mass: 640

Payload Capacity:

LEO: 8

GTO: 4



PSLV

INDIA'S MOST
PROLIFIC

Liftoff Mass: 320*

Payload Capacity:

LEO: 1.75

GTO: 1.4



GSLV MK-II

MEANT FOR
HEAVIER
COMMUNICATION
SATELLITES

Liftoff Mass: 415

Payload Capacity:

LEO: 6

GTO: 2.25

LVM3 is the culmination of more than three decades of efforts to indigenously develop a rocket that can carry heavier payloads, or venture much deeper into space. These requirements not only result in a massive increase in the size of the rocket, but also necessitate a change in the engines and the kind of fuel being used.

Compared to vehicles that ply on land, or even on water, rockets are an extremely inefficient medium of transport. The passenger (or payload) comprises barely 2 to 4 per cent of the weight of the rocket. Between 80 and 90 per cent of the launch-time weight of any space mission is the fuel, or the propellant. This is because of the unique nature of a space journey, which involves overcoming the tremendous force of gravity.

The LVM3 rocket, for example, has a lift-off mass of 640 tonnes, and all it can carry to lower earth orbits (LEO) — about 200 km from the Earth's surface — is a mere 8 tonnes. To the geostationary transfer orbits (GTO) that lie farther ahead — up to about 35,000 km from Earth — it can carry much less, only about 4 tonnes. However, the LVM3 is not particularly weak when compared to the rockets being used by other countries or space companies for similar jobs.

The Ariane 5 rockets, frequently used by ISRO earlier for its heavy payloads, has a lift-off mass of 780 tonnes, and can carry 20-tonne payloads to lower earth orbits and 10 tonnes to GTO.

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The Falcon Heavy rockets from SpaceX, supposed to be the most powerful modern launch vehicles, weigh over 1,400 tonnes at launch time, and can carry payloads weighing only about 60 tonnes.

India's plans to increase commercial launches

Till date, ISRO has launched 384 foreign satellites from at least 36 countries, with at least 10 dedicated commercial missions and several other Indian missions where they were carried as co-passenger satellites. The highest number of these commercial launches have been by companies from the United States.

A report of the parliamentary standing committee on the budget of the space agency said that there has been an increase in the revenue generated by ISRO's commercial arm New Space India Limited, created in 2019.

As per the report, revenue generated by NSIL has increased from Rs 1,731 crores in 2021-22 to a projected Rs 3,509 crores in 2023-24.

The revenue generated by the Department of Space increased from Rs 929 crore in 2020-21 to Rs 2,780 in 2022-23. This is an increase of nearly 200% and with the budget allocation for 2023-24 being the least in the last three years

The one web launch not only established LVM3 as a commercial vehicle propelling ISRO's entry into the commercial heavier launch market, but it also earned the agency upwards of Rs 1,000 crore.

The service provided to OneWeb, for which the space agency had to move around a few of its missions, ended up earning it one of the highest revenues. And, over the years, there has been an increase in funds that the space agency has generated.

OneWeb's high-speed, low-latency solutions will assist in connecting communities, businesses, and governments worldwide, demonstrating the unparalleled potential of LEO(low earth orbit) connectivity

The government plans to increase India's 2% share in the commercial market to 10% by 2030 through commercial launches by ISRO and launches offered by private companies like Skyroot and Agnikul, which are in the process of developing their own launch vehicles.

Keeping the commercial sector in mind, ISRO has also developed the Small Satellite Launch Vehicle (SSLV), which is meant to provide on-demand launch services commercially.

It has a low turn-around time of days and costs much less than the current workhorse Polar Satellite Launch Vehicle (PSLV). Two development flights of the SSLV have been completed – one successful, one partially successful – and it has been inducted into the ISRO fleet.

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