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1. Isro's 100th launch: why this is significant, the road ahead

ISRO 100th Rockets Launch

With the first launch of 2025, the Indian Space Research Organisation achieved the significant milestone of having carried out 100 launches. The GSLV-F15 put in orbit the navigation satellite NVS-02.



Why is this significant?

The space agency has its roots in the Indian National Committee for Space Research set up under the Department of Atomic Energy in 1962. The Indian Space Research Organisation that we know today was set up in 1969 — the same year that the United States sent men to the moon. A separate department of space was created only in 1972.

The space agency has since developed several rockets, becoming a reliable launch partner even for satellites from other countries. It has also carried out scientific missions such as the three Chandrayaan missions, which provide useful data not only to researchers from within the country but across the world.

Rockets

Isro has so far developed at least six generations of launch vehicles, of which four remain in operation. The first two generations of launchers are no longer in use.

It was the third generation PSLV that continues to be Isro's workhorse launcher. The PSLV is capable of carrying just under 2,000 kg to low earth orbit. There have been 62 flights of PSLV, including three development flights. Only two of the launches using PSLV have been unsuccessful.

Then came the GSLV, whose initial flights used cryogenic engines supplied by Russia. When the technology could not be transferred from Russia because of geopolitical reasons, India developed its own cryogenic engine. GSLV-F15 utilised for the 100th launch is a variation of this vehicle — and the eleventh flight using an indigenously developed cryogenic engine.

The GSLV MkIII, now called LVM3, capable of carrying nearly 8,500 kg to low earth orbit, is the heaviest vehicle India has. The vehicle has been used for seven launches so far, none of which have been unsuccessful. The vehicle was used for Chandrayaan-2 and 3 missions. And, a modified, human-rated version will be used for the Gaganyaan mission.

Isro has also developed the Small Satellite Launch Vehicle to transfer to private industry for commercial launch of small satellites. There have been three developmental flights of the launcher.

Launches: In the 100 launches so far, the space agency has placed in orbit 548 satellites weighing 120 tonnes in total. This includes 433 satellites weighing 23 tonnes that came from foreign nations. Isro has launched communication satellites, earth observation satellites, navigation satellites, and experimental satellites.

The space agency has also launched several scientific missions such as space-based observatory AstroSat, Mars Orbiter Mission, Chandrayaan 1, 2 and 3, another space observatory XpoSat, and solar mission Aditya L1.

What are the upcoming developments?

With the space agency targeting big-ticket missions such as the sample return mission from the moon, the mission to Venus, setting up an Indian space station, and sending a man to the moon, Isro is working towards developing a heavier rocket called Next Generation Launch Vehicle.

NGLV will be capable of carrying up to 30,000 kg to low earth orbit. It will be 91 metres tall as compared to the 43 metres of LVM3. It will also have a re-usable first stage, which would be utilised 15 to 20 times, to make the launches more affordable.

The cabinet has also green-lit the setting up of the third launch pad needed for NGLV launches. Built at an estimated cost of Rs 3984.86 crores over four years, the third launch pad would also be capable of launching human missions along with the modified second launch pad. It will also help in increasing the number of LVM3 launches, thereby increasing the space agency's capability of carrying out heavy commercial missions.

What is NVS-02?

NVS-02 is one of the five replacement satellites for the Indian Regional Navigation Satellite System, also referred to as NavIC (Navigation with Indian Constellation). The new generation satellites are heavier with longer mission life. They carry the indigenously developed atomic clock onboard.

What is NavIC?

NavIC is a seven-satellite regional positioning system that can provide location data on the Indian mainland and up to 1,500 kilometres around. The NavIC satellites can provide position accuracy of up to 20 m under standard positioning service that is available to all and a restricted service for better accuracy available to customers.

A fully functional NavIC system with all seven satellites and ground stations outside of India is likely to be more accurate than the GPS in the region currently. The satellites for NavIC are placed directly over India, which ensures better availability of signals even in difficult geographical locations than GPS whose signals are received in India at an angle making it difficult to access in certain areas like valleys and forests.

Are there other countries that have similar systems?

India is the only country with a regional navigation system. Japan's four-satellite Quasi-Zenith Satellite System (QZSS) augments the GPS signals in the region. Other than there are four global navigation systems in the world — the American GPS, the Russian GLONASS (GLObalnaya NAVigatsionnaya Sputnikovaya Sistema), the European Galileo, and the Chinese Beidou. There have been discussions in the past about increasing the coverage area of India's IRNSS as well.

Relevance: GS Prelims & Mains Paper III; Science & Technology

Source: Indian Express

2. How Uttarakhand UCC regulates live-in relationships

Uttarakhand UCC Live-in Relationships

The Uttarakhand government recently rolled out the Uniform Civil Code Rules for regulating live-in relationships which requires, among other things, the couple to fill a 16-page form and obtain a certificate from a religious leader showing they are eligible to marry, if they so choose. The Uttarakhand UCC makes it compulsory to register all live-in relationships. This applies to Uttarakhand residents living in the state as well as those living elsewhere in India. Chief Minister Pushkar Singh Dhami has said that a law regulating live-in relationships is necessary to avoid domestic crimes outside of marriage.

First, what is a live-in relationship?

The Uttarakhand UCC describes a live-in relationship as a relationship between a man and a woman, "who cohabit in a shared household through a relationship in the nature of marriage." The term "shared household" is defined as one "where a man and a woman, not being minors, live under one roof in a rented accommodation or in a house owned jointly or by any one of them or any other accommodation."

Essentially, cohabitation by a male and a female adult and managing of a household, subject to exceptions, qualifies as a live-in relationship.

How Uttarakhand UCC regulates live-in relationships



Who can enter into a live-in relationship?

The aforementioned definition, however, covers only heterosexual relationships. It also specifies certain groups that are prohibited from entering such a relationship, like in the case of marriage. The Uttarakhand UCC mentions some 74 prohibited relationships for marriage, including first cousins.

Additionally, the law states that one cannot enter a live-in relationship with a person who is already married or in another live-in relationship.

There is also a crucial provision which states that "where the consent of one of the partners was obtained by force, coercion, undue influence, misrepresentation or fraud as to any material fact or circumstance concerning the other partner, including her/his identity," the relationship will not be counted as a live-in relationship.

The Registrar has the power to make a "summary inquiry" at the time of registration to ascertain if a relationship being registered is indeed in the nature prescribed by law. Questions of consent, identity can all be "verified" by the government.

How does the UCC regulate live-in relationships?

Part 3 of Uttarakhand's UCC deals with live-in relationships. The law essentially requires individuals to submit "a statement of live-in relationship" within a month of entering such a relationship. It also requires them to submit a statement of "termination of relationship."

The law states that the registration is only for the "purposes of record keeping" and also that the Registrar will forward these statements to the local police stations where the couple lives, and in case one of them is less than 21 years of age, to their parent or local guardian.

How does one register a live-in relationship?

For live-in couples, the code stipulates either online or offline registration. For online registration, citizens need to register with their Aadhaar. An OTP will be sent to the mobile number linked to Aadhaar.

For offline registration, the couple may approach the registrar of their jurisdiction (in the place of the shared household) with the requisite registration form and supporting documents. The application will be verified by the registrar within 30 days of its receipt. If it is rejected, an appeal can be sent within 30 days.

The Rules also state that if one of the live-in partners dies during the continuance of a live-in relationship, the partner shall update this information within thirty days from the date of issuance of the death certificate of the deceased.

Proof of permissibility of marriage.

This is a new legal documentation required to ascertain that the couple are not within the degrees of prohibited relationship. The Rules require a certificate issued by a "religious leader/community head concerned or official of a religious/community body concerned that the customs & usage governing the party/parties to the marriage permit the marriage within the degrees of prohibited relationship." Essentially, this certificate would have to show that if they wished, the couple could be married. The Rules also require full name, address and email id of the religious official certifying the relationship.

What are the benefits of registering?

If a woman is deserted by her live-in partner, she can seek maintenance as if they had been married. The law states that the provisions related to maintenance in a marriage shall apply mutatis-mutandis (a Latin legal term to indicate correlation).

The law also states that legitimacy of a child born out of a live-in relationship shall be recognised. It has been the position of law since 1976, and has been widely applied by the Supreme Court, that children born out of wedlock are legitimate and can inherit property.

Section 16(1) of the Hindu Marriage states that "notwithstanding that a marriage is null and void," under the Act, "any child of such marriage who would have been legitimate if the

marriage had been valid, shall be legitimate.” How a marriage is defined, whether the man is already married are all questions of facts that courts have to decide on a case to case basis.

The Rules also state that as long as a certificate or a provisional certificate of a live-in relationship is available, no landlord can refuse tenancy solely because a couple is not married.

What happens if a couple fails to register?

There is a jail term prescribed for not registering a live-in relationship. Also, the rules prescribe that landlords are required to ask for a certificate for renting a house to an unmarried couple. Under the UCC Act, a person who fails to register a live-in relationship within 30 days of entering into one, could face charges. Upon conviction, a magistrate can sentence the individual with a jail term of up to three months, or with a fine up to Rs 10,000 or both.

The Registrar, either on his own account or based on a complaint that a person has not registered their live-in relationship can issue a notice for registration. If the person fails to comply with the notice, he could face charges. Upon conviction, a magistrate can sentence the individual with a jail term of up to six months, or with a fine up to Rs 25,000 or both.

If a person has filed a false complaint about another person, the complainant shall be cautioned and warned to be careful in future. If the same person files another complaint which is found false, they will be asked to pay a fine as determined by the State Government, and on further false complaints by the same person, they will be liable to pay a heavier fine.

Relevance: GS Prelims & Mains Paper II; Governance

Source: Indian Express

3. Mahakumbh stampede: Causes of such disasters, how they can be prevented

Mahakumbh Mela 2025 Stampede News

A stampede at the Mahakumbh Mela in Allahabad killed 30 people and left 60 more injured. UP Chief Minister Yogi Adityanath in a statement said the administration was overwhelmed by the huge crowds converging at the Mela for Mauni Amavasya and a large number of people moving towards the Sangam Nose at the same time.

The National Disaster Management Authority (NDMA), the apex body on formulating disaster mitigation policies in the country, had in 2014 published a report on crowd management at big events and prevention of stampedes.

The report said, “Majority of the crowd disasters in India and developing countries have occurred at religious places.”

What causes stampedes?

Causes of stampedes can be many: structural, which includes weak temporary structures, poor barricading, poor guardrails, poorly-lit stairwells, narrow entry and exits etc; fire or electrical failure; inadequacies in crowd control; crowd behaviour; poor security; and lack of coordination between stakeholders.

Crowd Control is Key

According to the NDMA report, crowd control is key to avoiding stampedes. Some of the reasons due to which crowd control fails, the report says, include: arrival of more than anticipated crowd at a religious gathering or a public function; underestimation of audience, staffing and services; people allowed in excess of holding capacity; limited holding area before the entrance; lack of access control; closed/locked exit; lack of adequate and strong railings to marshal the queue; lack of sectoral partitions to segregate assembled crowd, etc.

The report suggests improper/inadequate arrangements only add to the problem.

"As a result, there is either panic or an excitement in visitor's mind which further leads to evacuation or crowding respectively," the report says. This, it claims, leads to either overcrowding or accelerated movement of the crowd. "On occasions, this has led to deaths because of crushing, suffocation, and trampling. Historically, compressive asphyxia has been the most common reason for deaths in crowd disasters," the report says.

What does it say about past incidents?

The report makes references to many past stampedes. One among them is the August 2003 stampede at the Nashik Kumbh, where 29 pilgrims died.

According to the report, a magisterial enquiry found the following reasons for the stampede: pressure of people at various points at the barricades; a sudden flow of people in reverse direction; sadhus were allowed to move in procession on elephants and in jeeps along the "shahimarg" along with pilgrims; and unforeseen ingress of pilgrims on the "shahimarg" from various points.

Another stampede took place during the Kalubai Yatra Mandhardevi at Wai, Satara, Maharashtra, in January 2005. It killed 293 people.

Relevance: GS Prelims & Mains Paper III; Disaster Management

Source: Indian Express