

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

RAJYA SABHA

STARRED QUESTION NO. 280

TO BE ANSWERED ON THURSDAY, AUGUST 13, 2026

SPACE DEBRIS MANAGEMENT VIS-À-VIS LEO SATELLITE SUSTAINABILITY

*280. SHRI SUKHENDU SEKHAR RAY:

Will the PRIME MINISTER be pleased to state:

- (a) whether the growing deployment of Low Earth Orbit (LEO) satellite constellations for internet connectivity raises concerns regarding accumulation of space debris;
- (b) if so, the details thereof;
- (c) whether any institutional mechanism exists for coordinating between the Department of Space and international agencies for space debris monitoring and mitigation;
- (d) if so, the details thereof;
- (e) the steps being taken to develop guidelines or policy measures for end-of-life disposal of satellites; and
- (f) the roadmap for ensuring long-term sustainability of India's space assets in increasingly congested orbital regions?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PG &
PENSIONS AND IN THE PRIME MINISTER'S OFFICE
(DR. JITENDRA SINGH):

(a) to (f) A Statement is laid on the Table of the House.

STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY TO STARRED QUESTION NO. 280 REGARDING 'SPACE DEBRIS MANAGEMENT VIS-À-VIS LEO SATELLITE SUSTAINABILITY' ASKED BY SHRI SUKHENDU SEKHAR RAY FOR ANSWER ON THURSDAY, AUGUST 13, 2026.

(a) & (b)

Yes. the proliferation of a large number of Low Earth Orbit (LEO) constellations for internet connectivity raises concern on space debris. The satellite constellations for internet connectivity typically consists of a few thousands of satellites, heightening collision risks in the orbital regions near their orbital shells by many folds. While many of the large constellations perform autonomous collision avoidance, some of them are likely to fail on-orbit and not be capable of manoeuvring for collision avoidance. There is also risk posed by small-sized untrackable debris, which cannot be avoided through collision avoidance or shielded against, and can cause mission ending damage on impact and render a satellite non-functional/debris. Since the number of satellites are enormous, the aggregate risks for debris creation is non-trivial. Furthermore, any fragmentation event (either due to a collision or accidental break-up) in the neighbourhood of a populated orbital shell of a constellation would escalate such risks.

- (c) Yes. Inter-Agency Space Debris Coordination Committee (IADC), formed in 1993, is considered the most recognised body on space debris monitoring and mitigation matters. ISRO under DoS has been a member of IADC since 1996. UN-COPUOS addresses Space debris mitigation and long-term sustainability matters, including safety of space operations.
- (d) India is represented in all international fora dealing with space debris matters, such as the IADC, UN-Scientific and Technical Sub-committee (UN-STSC) Working Group on Long Term Sustainability, Expert Group on SSA. IADC members regularly discuss on matters pertaining to space debris and revise the space debris mitigation guidelines in light of the evolving space debris environment. Space debris monitoring and spaceflight safety aspects are discussed in LTS and SSA WG. There are other fora like IAA Space Debris Working Group, and the ISO Working Group 7. Such platforms enable coordination between the

Department of Space and international agencies for space debris monitoring and mitigation.

- (e) Indian Space Policy mandates adoption of internationally recognised guidelines on space debris mitigation in Indian space programme, including end-of-life disposal. Debris Free Space Mission initiative, spearheaded by ISRO, is a proactive step for implementing guidelines on end-of-life disposal of satellites. The Norms, Guidelines and Procedures released by IN-SPACe in 2024 also encourages all Indian space actors to adopt adequate post mission disposal measures or ensure that their space assets will have very limited orbital life due to natural orbital decay.
- (f) Space Situational Awareness (SSA) is one of the most crucial enablers of sustainability. Others include operator's responsibility to fulfill technical requirements (maneuverability, trackability), fulfilling minimal obligations like registration, sharing of Point of contact along and a robust regulatory framework. Voluntary and more widespread implementation of internationally recognised space debris mitigation and better compliance with the requirements of debris free space mission will play a key role in safeguarding space assets and limiting space debris generation. In addition to mitigation, active debris removal (ADR) will be essential to curtail the growth of space debris. Activities which are precursor to ADR have been initiated through on orbit demonstrations, and shall be matured over time. While recognising the role of international collaboration and data sharing for comprehensive space situational awareness, which is a key enabler of long-term sustainability, attaining self-reliance through indigenous capacity building for space object monitoring will be pursued steadfastly, along with innovative measures and R&D to tackle the emerging challenges. Awareness raising among space actors on the fragility of utilisable regions of the space environment will aid in ensuring long term sustainability.
