

3. Space debris

Why in News?

- Recently, United Nations agreed on a treaty to conserve and sustainably use the high seas beyond national boundaries, scientists are calling for a legally-binding agreement to protect the Earth's orbit from space debris.

Highlights

- The United Nations Committee on the Peaceful Uses of Outer Space has laid out guidelines to mitigate space debris, but there is no international treaty that seeks to minimise it.
- Space debris refers to the collection of artificial objects in orbit around the Earth that have lost their utility or are no longer in use.
- These objects include non-functional spacecraft, abandoned launch vehicle stages, mission-related debris, and fragmentation debris.
- The number of satellites orbiting Earth is expected to reach 60,000 by 2030, up from the current 9,000, and the amount of untracked debris is a cause for concern.
- Around 27,000 pieces of “space junk” are being tracked by NASA but over 100 trillion untracked pieces of old satellites circle the planet.
- Currently, companies are not incentivised to clean up orbits or to include de-orbiting functions in satellites. De-orbiting means bringing dead satellites back to Earth.
- The current Outer Space Treaty is hindered by ever-changing geopolitics, technology and commercial gain.
- ISRO set up the System for Safe and Sustainable Operations Management (IS 4 OM) to continually monitor objects posing collision threats.
- ‘Project NETRA’ is also an early warning system in space to detect debris and other hazards to Indian satellites.
- A legally binding agreement is necessary to protect the Earth's orbit from space debris.
- The treaty should ensure that producers and users take responsibility for their satellites and debris and enforce collective international legislation with fines and other incentives to make countries and companies accountable for their actions.
- Countries using the Earth's orbit should commit to global cooperation, and companies should be incentivized to clean up orbits and include de-orbiting functions in satellites.
- Using reusable launch vehicles instead of single-use rockets can help reduce the number of new debris generated from launches.