

## **5. ISRO's Second Spaceport at Kulasekarapattinam (TN)**

**Prelims Level: Space Technology**

**Mains Level: GS-III Awareness in the Fields of IT, Space, Computers, Robotics, Nano-Technology, Bio-Technology and Issues relating to Intellectual, Property Rights.**

### **Why in News?**

- The ISRO has commenced land acquisition for its second launchpad in Kulasekarapattinam, a town in the Thoothukudi (Tuticorin) district of Tamil Nadu.

### **ISRO's spaceport:**

- ISRO's first and only spaceport, the Satish Dhawan Space Centre (SDSC), is located in Sriharikota, about 100 km north of Chennai, in the state of Andhra Pradesh.
- The organisation launches its PSLV and GSLV rockets from here.
- The SDSC, setup in 1971, currently has two active launchpads.
- Its first launchpad was decommissioned once the Augmented Satellite Launch Vehicle programme ended in 1994.
- The first of the two active pads mostly services the PSLV and the second, the GSLV, and which ISRO is currently modifying to accommodate crewed vehicle missions as part of its upcoming human spaceflight project, Gaganyaan.
- The second spaceport at Kulasekarapattinam is expected to provide an important advantage to ISRO's upcoming Small Satellite Launch Vehicle (SSLV), a smaller counterpart of the PSLV.

### **Need for another Launchpad:**

- The PSLV is designed to launch satellites into pole-to-pole, or polar, orbits around Earth.
- However, it can't enter into such an orbit straightaway after launch because its trajectory needs to avoid flying over Sri Lanka, protecting its popular centres from any debris from the rocket. So once the rocket lifts off from Sriharikota, it flies further east to avoid Sri Lanka and then steers itself back towards the South Pole.
- This manoeuvre requires more fuel, and for a smaller rocket like the SSLV, the addition could eat into its already limited payload capacity and reduce the rocket's value for Antrix, ISRO's commercial operator.
- By setting up a spaceport in Kulasekarapattinam the SSLV will lift off over the Lakshadweep Sea and won't have to swerve around Sri Lanka as it climbs to higher altitudes.

### **Significance of Thoothukudi's location:**

- Proximity to the seashore makes Thoothukudi ideal for “straight southward” launches. From Sriharikota, such southward bound launches are not possible as the rockets have to fly around Sri Lanka.
- Nearness to the equator: Like the Sriharikota spaceport in the Satish Dhawan Space Centre, Thoothukudi was selected as a spaceport due to its nearness to the equator. A rocket launch site should be on the east coast and near the equator.
- Logistical ease: ISRO has its Liquid Propulsion Systems Centre (LPSC) at Mahendragiri in Tirunelveli district, where it assembles the second and fourth stage engines for the PSLV. Instead of transporting the second and fourth stages to Sriharikota from Mahendragiri, it would be easier to shift them to the launch pad if it is built in Kulasekarapattinam, which is around 100 km away.

