ISRO's 'Privatisation' Move and India's Space Policy

Mains: *GS III – Science and Technology*

Why in News?

Recent concerns among ISRO employee associations over the transfer of launch-vehicle manufacturing and spaceport operations to private entities have therefore raised an important concerns.

What Does the Indian Space Policy, 2023 Say?

- **ISRO –** ISRO is expected to increasingly concentrate on:
  - Research and development of advanced space technologies,
  - Development of new applications and systems,
  - Scientific and exploratory missions,
  - Demonstration of advanced capabilities,
  - Human-spaceflight programmes, and
  - Sharing mature technologies with industry.
- A significant policy shift is that ISRO is expected to **transition away from routine manufacturing of operational space systems**.
- Thus, the policy does not envisage ISRO becoming irrelevant. Instead, it seeks to move ISRO towards a research-oriented and technology-development role.
- **IN-SPACe –** The **Indian National Space Promotion and Authorisation Centre (IN-SPACe)** functions as an independent nodal agency under the Department of Space.
- Its responsibilities include promoting and authorising private-sector space activities, facilitating access to government infrastructure, supporting technology transfer, encouraging industry-academia collaboration and ensuring that private activities comply with national-security and international obligations.
- IN-SPACe therefore represents the institutional mechanism through which India seeks to create a broader space ecosystem.
- **NSIL – NewSpace India Limited (NSIL)** is the commercial arm of ISRO under the Department of Space.
- Its role is to commercialise publicly developed space technologies and provide space-based services to domestic and international customers.
- It has increasingly become associated with commercial launch services.
- **Private Entities –** The policy allows non-governmental entities to undertake end-to-end activities, including the establishment and operation of space objects, launch services, ground infrastructure, communication, remote sensing and navigation services.

- The underlying principle is to move from an **ISRO-centric model to an ecosystem-based model**.

What Technologies Are Being Transferred?

- **Small Satellite Launch Vehicle –** The **Small Satellite Launch Vehicle (SSLV)** was designed with commercialisation and easier industrial production in mind.
- Compared with larger launch vehicles, it requires fewer personnel, less assembly time and lower costs.
- Following its operationalisation, the government-owned **Hindustan Aeronautics Limited (HAL)** won the bid for technology transfer and production.
- During the technology-transfer period, ISRO will provide technical support before the company gains greater autonomy over design, suppliers and commercialisation.
- This illustrates the new model: **ISRO develops and demonstrates technology; industry manufactures and commercialises it.**
- **Polar Satellite Launch Vehicle –** The **Polar Satellite Launch Vehicle (PSLV)** has also entered the commercialisation process.
- A consortium of HAL and Larsen & Toubro has been awarded a contract to manufacture PSLVs.
- The objective is not to eliminate ISRO's capability but to allow industry to acquire the capacity to manufacture an established operational launch system at scale.
- **Launch Vehicle Mark-3 –** The **LVM3**, India's heavier launch vehicle, is also being prepared for greater private-sector participation.
- A fresh expression of interest was issued after the earlier commercialisation attempt did not result in an awarded bid.
- Greater industrial participation in LVM3 manufacturing could eventually expand India's capacity to offer commercial launches and support more ambitious missions.
- **Kulasekarapattinam Spaceport –** Another important development is the proposed transfer of operational management of the **Small Satellite Launch Complex at Kulasekarapattinam in Tamil Nadu** to a selected private entity.
- ISRO would provide technical guidance, operational support and training during the transition.
- This indicates that commercialisation is extending beyond rockets to **space infrastructure and launch services**.

Why Is India Encouraging Private Participation?

- The primary motivation is India's relatively small share of the global space economy despite its considerable technological capabilities.
- Historically, ISRO's principal objective was to fulfil national developmental and strategic requirements rather than maximise commercial space services. Consequently, India's space sector remained comparatively small.
- The reforms seek to expand India's space economy substantially over the coming decade.
- Private participation can provide greater investment, faster manufacturing, economies of scale, specialised industrial expertise, increased launch frequency, innovation and competition and access to international markets.

- The growth of Indian space startups demonstrates the potential of this ecosystem. Companies working in launch vehicles, satellites, propulsion, earth observation and space applications can complement rather than simply replace ISRO.

Why Are ISRO Employees Concerned?

- **Loss of Institutional Expertise –** If ISRO completely withdraws from manufacturing operational systems, there is a possibility of losing **hands-on engineering expertise** over time.
- Manufacturing knowledge is not merely a production activity; it can strengthen design, troubleshooting and system integration capabilities.
- **Strategic Autonomy –** India's space capabilities have significant strategic implications. Satellites are essential for communications, navigation, weather forecasting, disaster management, intelligence and defence.
- Therefore, the country cannot depend entirely on private entities for critical capabilities.
- **Dependence on a Nascent Private Sector –** India's private space industry is still developing. It may take considerable time before private companies acquire the scale, experience and financial resilience necessary to independently handle all critical requirements.
- Hence, complete withdrawal by ISRO could create vulnerabilities if private capacity does not develop as anticipated.
- **ISRO's Strategic and Scientific Role Must Continue –** Commercialisation should not come at the cost of India's scientific ambitions.
- ISRO has several major missions ahead, including **Gaganyaan**, India's human-spaceflight programme; the planned **Bharatiya Antariksh Station**; Chandrayaan-4 and Chandrayaan-5 lunar sample-return missions; and future missions to Mars and Venus.
- India also intends to establish a sustained human presence in low-Earth orbit and eventually pursue human lunar exploration.
- Such programmes require capabilities that go beyond routine commercial launches. They demand advanced research, systems integration, mission management and institutional memory.
- Therefore, ISRO must retain sufficient in-house capabilities to respond to **strategic contingencies and high-risk scientific missions**.

Privatisation vs Commercialisation: The Key Distinction

• The controversy can largely be understood by distinguishing **privatisation from commercialisation**.
• Privatisation would imply transferring ownership and core institutional responsibilities of ISRO to private entities.
• The current policy instead seeks **commercialisation of mature technologies and outsourcing of routine operational activities**, while ISRO retains responsibility for advanced research, strategic capabilities and major scientific missions.
• In this sense, the objective is not to weaken ISRO but to enable it to move up the technological value chain.

What could be done?

- **Retain strategic capabilities within ISRO –** Critical technologies and expertise should remain available in-house.
- **Transfer mature technologies –** Established systems can be progressively commercialised once adequate industrial capacity exists.
- **Maintain knowledge continuity –** ISRO should preserve manufacturing and systems-integration expertise even where production is outsourced.
- **Strengthen IN-SPACe –** It should ensure transparent authorisation, safety regulation and a level playing field.
- **Promote competition –** Space reforms should prevent excessive concentration of the sector in a few private firms.
- **Invest in human capital –** The transition should include reskilling and redeployment of existing technical personnel.
- **Develop strategic public-private partnerships –** Sensitive and national-security-related activities should receive greater government oversight.
- **Encourage international competitiveness –** Indian companies should be supported in becoming globally competitive space-service providers.

What lies ahead?

- The appropriate approach is therefore neither complete state control nor indiscriminate privatisation.
- India needs a **"public leadership–private participation" model**, in which ISRO remains the technological and strategic anchor while private industry becomes the engine of scale, innovation and global competitiveness.
- Such a balanced ecosystem can help India transform its space programme from a successful national capability into a **globally competitive space economy**, without compromising strategic autonomy.

Reference

The Indian Express| ISRO's 'privatisation' move

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