

ASG Analysis: Reforms, Opportunities, and Challenges in India's Space Sector

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Executive Summary

- As a part of its Covid-19 relief package, the Indian government announced structural reforms to open India's space sector for private sector participation and prioritize the core competencies of its different stakeholders.
- The Union Cabinet also approved the formation of an Indian National Space Promotion and Authorisation Centre (IN-SPACE) to promote the participation of private industry in space activities, including planetary exploration missions. These reforms are significant as the state-controlled Indian Space Research Organization (ISRO) and its allied entities have long held a virtual monopoly in the sector.
- A shift in the fundamental focus of India's space program – from remote-sensing, communications, and meteorology to telecommunications, defense, and satellite networks – has necessitated the entry of private players with strengths tailored to these technologies.
- Once adopted, the government's provisional measures will introduce new opportunities – in satellite manufacturing, communications technology, and earth observation – and encourage innovation, growth, and entrepreneurship. The success of the reforms will depend on the government's ability to remove other bottlenecks to usher in greater private sector participation.

India's space sector: Why reform it?

India's robust space program has achieved significant progress in a relatively short time period. The country currently has the fourth-highest number of satellites in orbit, and over a dozen facilities that design and develop communications and earth observation satellites and rockets. India has also successfully conducted a lunar mission and a Mars mission, and it is the only country to do so on its first attempts. This is a significant achievement and point of pride for India, especially given its status as a "developing" nation.

The Indian Space Research Organization (ISRO) enjoys immense political support in India. In the 2020-21 budget the Indian Finance Ministry allocated Rs. 13,479 crore (\$1.8 billion) to the ISRO, an 8% increase from the previous year's budget. Overall, the Indian space economy is [valued](#) at \$7 billion, around 2% of the global space economy.

Despite its achievements and priority status, India's space sector suffers from several regulatory constraints:

Conflicts of interest: The Department of Space (DOS) sits under the Prime Minister's Office and directly controls the ISRO. ISRO also has a commercial arm – [Antrix](#) – that promotes ISRO's space products and

technologies to an international customer base. The government therefore plays the dual role of regulator and commercial executor, which has led to significant bottlenecks in the participation of the private sector as the government balances enhancing competition with protecting the commercial viability of its own products. Although the government allows for 100% FDI into the sector, all investments are governed by the sectoral guidelines of the Department of Space/ISRO, under the government route.

National security concerns: Government security concerns around technology sharing, launch systems, and satellite capabilities have resulted in a reluctance to include private players in the industry.

The recent reforms represent a long overdue step to reconcile the regulatory hurdles and pave the path for growth.

What do the reforms include?

As part of the fourth installment of the Indian government's economic stimulus package, the Finance Minister announced reforms that will provide "a level playing-field [for private companies] in satellite launches and space-based services." The [announcement](#) included the following:

- Providing a predictable policy and regulatory environment for both ISRO and private companies.
- Including the private sector in future planetary exploration and outer space travel.
- Easing geospatial data policy to make remote sensing more widely available to technology companies who collect meteorological and agricultural data.
- Allowing private sector companies to lease ISRO testing facilities to test their products and equipment.

On June 24, the Union Cabinet [fulfilled](#) some of these promises by creating an Indian National Space Promotion and Authorization Centre (IN-SPACe), which will work with private firms to "hand-hold, promote, and guide the private industries in space activities." Additionally, the cabinet created the New Space India Limited (NSIL), a public sector enterprise that will reorient India's space activities from a supply-driven model to a demand-driven model and advocate for a more friendly regulatory environment in India's space sector.

While the government has taken strong first steps to adequately deregulate, streamline, and simplify the PPP space sector model, the announcements must translate into action. The sector has potential to become a hotbed for innovation, investment, and growth. Once adopted, ASG envisions that the reforms will provide the following:

- **Regulatory clarity:** Improved regulatory clarity would mean fewer barriers of entry for private firms and better synergies between ISRO and private collaborators.
- **Incentives to private companies:** By opening up ISRO testing facilities to the private sector, Indian rocket-making companies will be able to build their satellites or test their rockets, reducing cost and increasing incentives for firms to build operational spacecraft.
- **New investment opportunities:** By providing access to its satellite technology, facilities, and orbital slots, ISRO would help the private sector attract both local and Foreign Direct Investment (FDI). The private sector can cater to the demands of Direct-To-Home (DTH) operators, allowing ISRO itself to focus on its space exploration priorities.

- **IP protections:** The private sector remains concerned about sharing its intellectual property with the government. If ISRO is serious about partnering with the private sector, policymakers will have to view the industry as more than just a collection of manufacturers or service providers.

Potential opportunities

The Indian space sector is relatively small and uncrowded. With the country's established space infrastructure, a healthy supply chain and supplier ecosystem, and the promise of additional regulatory reform, India will be one of the premier locations for space sector innovation and investments. In this capital-intensive sector, India is also advantaged by its comparatively low operating costs. Removing regulatory blockages will pave the way for increased FDI into the sector. ISRO has a strong project pipeline with more than 60 missions planned for the next five years, many of which will be conducted alongside private innovators and contractors. The following sub-sectors present key opportunities:

- **Satellite manufacturing:** As security agencies develop greater need for space technologies, ISRO will need to balance its routine development of remote sensing and telecommunications missions with greater delivery requirements for national security. With a flagship program to facilitate the development of spacecraft/satellites, a large-scale market opportunity for private enterprises in satellite manufacturing could arise.
- **Earth observation:** New markets can be opened for hyperspectral imaging and synthetic aperture radar (SAR), both of which can be deployed on small satellites and will require the import of advanced technologies from countries such as the United States.
- **Communication:** Satellite communication is still the largest services market, and there is considerable demand in India for satellite-based services for communication purposes. This is likely to increase with the implementation of initiatives like 5G and BharatNet, alongside India's broader digital goals.
- **Defense:** The Integrated Space Cell in the Ministry of Defense utilizes India's space assets for military purposes. The Ministry currently has exclusive use of 14 satellites, by which it monitors threats against India's satellite network. With an increased focus on space travel and exploration, defense opportunities will likely increase.

About ASG

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