CENTRE FOR SECURITY STUDIES | ISSUE BRIEF

APRIL 2022

PRIVATIZATION OF THE INDIAN SPACE SECTOR

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Edited by: Aakrith Harikumar

Space has become an inevitable part of development and prosperity in the 21st century because of its overarching applications in wide aspects of civilian life like safety and security, disaster management, healthcare, military operations, communication and environmental protection. The competition between countries to become the leading space power is constantly increasing due to the enormous power of space in all aspects of human welfare. The ongoing space race is also unfolding different dimensions of this sector and countries are continuously looking for ways to outshine others. The constant evolution of the space industry brings into light the rising position of private players in enhancing space science and technology and building its commercial value.

India has been a marginal player in space science and technology with less than a 2 per cent share in the global space economy despite the country's considerable potential and human resources. This highlights the need for India to change its outlook toward the space sector and adopt new and efficient ways to elevate its position internationally. (Sinha 2020)

For decades, the Indian space sector has practised a limited approach in which the participation of private entities in space activities has been extremely narrow. The Indian Space Research Organisation (ISRO) and the Department of Space (DOS) are the primary organs that have been dominant in space-related research, human spaceflight, and technological development in India. Although the Indian Space sector has established private partnerships in the past that have helped in activities like manufacturing of space assets and satellites and space missions, they have been limited. Moreover, the involvement of the private sector in space science and technology has been based on more sub-contractual agreements with ISRO. More than 150 private entities have been associated with ISRO which in comparison to NASA is extremely low. (Devezas, Neyra Belderrain, and Salgado 2013)

Need for Privatisation in India

With the rapidly changing dimensions of Space, the need for privatisation of the space sector has increased to a great extent. India needs to expand its private participation as it is significant in conducting research, manufacturing satellites, designing and fabricating space assets, discovering

new frontiers, and exploring new strategies and ideas. Moreover, private sector involvement has several other advantages. For instance, one of the most significant advantages of private participation in India is that it would help ISRO maintain a laser focus on space exploration, science, research and other strategic advantages by reducing its burden concerning space activities like commercial and launching projects. In other words, the private sector would enable ISRO to commit to space activities that are of paramount importance instead of diverting its attention to control and monitor every minor activity. (The Economic Times 2021)

In addition to that, privatisation would also lead to a significant rise in the number of space opportunities, along with employment generation. This would motivate the Indian youth to participate in space research and contribute their vision, ideas and start-ups, thereby helping India improve its space capabilities. This active participation is essential in ensuring better utilisation of space resources and amplification of space missions and development projects in areas that are still left undiscovered. Therefore, the joint efforts of ISRO and private bodies would help the Indian Space program reach newer heights of excellence. (Rajagopalan 2020)

The significance of the involvement of private enterprise in space can also be demonstrated through the example of a private company called Space X which successfully developed the launch vehicle Falcon 9, and put an end to the domination of the United Alliance and Arianespace in this arena. Thus, private players can play a key role in making significant contributions to space and exploring areas that are overlooked by the central space authorities. (Iliopoulos and Esteban 2019)

India's Efforts to Privatise the Indian Space sector:

In recent years, the Indian government has also realised that India's share in the international space economy has been extremely low. Therefore, it needs to adopt new strategies and reforms that align with the space objectives of the country. The Indian space sector needs to move beyond being the supplier of satellite and rocket launch services and be more effective in utilising space resources, amplifying space services that are in high demand and developing space technology and related projects. Additionally, India is becoming more aware of the need for expansion in the

Indian space sector by involving the innovation and capacity of private players to achieve space objectives. (Kumar 2022)

Prime Minister Modi is also putting efforts to develop the Indian Space Sector according to the needs and demands of today. More precisely, he has emphasised the need to use resources, innovation and technology to strengthen India's space capacity and secure well-rounded growth in this field. In 2020, Modi took the firm decision of permitting the private sector to participate in the Indian space sector. Moreover, the government has increasingly encouraged the involvement of the private sector to accelerate the advancement of space technology for steady progress and advancement of Indian space power. Besides that, this decision is also based on the vision of the government to limit ISRO's monopoly over space science in general. The government of India also looks forward to developing the space sector by revising its Foreign Direct Investment (FDI) policy for space development and widening investment opportunities for foreign companies. (Leclercq and Pojani 2021)

In 2020, the Government of India made new reforms to raise the level of private participation. As a part of this, an autonomous organisation called the Indian National Space Promotion and Authorisation Centre (IN-SPACe) governed by DOS, was set up to encourage private involvement in Indian space activities. ISRO has been supporting this initiative of opening the space sector by adopting a Demand-Based model to replace the pre-existing Supply-Based model. According to the new reforms, Non-government Private Entities (NGPE) are encouraged to participate in capacity building and development of space technologies through IN-SPACe. The space projects approved by IN-SPACe are supported and facilitated by ISRO, which is a significant strategy for achieving rapid development in space-based activities. In other words, IN-SPACe acts as a facilitator between private companies and ISRO that ensures that the Indian space infrastructure, technology and resources are utilised effectively by private parties. It is also responsible for ensuring the provision of infrastructure and resources, managing the operation of spacecraft, taking safety measures and governing spacecraft information.

In addition to IN-SPACe, the Indian government also set up other bodies like the New Space India Limited (NSIL) and Antrix Corporation for enhancing the marketing and commercial activities of ISRO. These two companies are known as the commercial arms of ISRO. The NSIL in specific,

came into existence in 2019 to commercially exploit work related to space like manufacturing Small Satellite Launch Vehicle (SSLV), marketing space-related products and other services like launching and remote sensing and also facilitating the transfer of technology developed by ISRO. To put it more simply, the research and technological space developments by the ISRO are marketed to private companies through this body. In 2020, NSIL and the DoS also signed an MoU to assist the process of identification of technologies developed by ISRO and transfer them to external agencies for commercialisation. (Siddiqui and Siddiqui 2020)

Another space start-up called Digantara Research and Technology (DRT), founded by the alumni of a private Indian university became India's first air and space surveillance company for monitoring and mapping space debris based on light detection. In 2021, Modi also started the Indian Space Association (ISpA) based on his vision of making India Atmanirbhar through association with stakeholders, formulation of policies, and building global connections that support space objectives. This association was founded to ensure the facilitation of space resources and services to private companies and to provide support to start-ups. (Mukul and Aryan 2021)

Furthermore, the National Space Transportation Policy (NSTP) was launched by ISRO under the supervision of the GOI to deal with the development of India's space capacity by assuring reliable and independent access to space, building and sustaining space transportation technologies, infrastructure and space exploration, establishing partnerships with global space organisations, and unleashing India's space potential. Additionally, this policy is also designed to ensure that IN-SPACe provides private companies with a level playing field, thereby, strengthening the private participation in space development to bring new ideas, innovations, and technological advancements to the table to unlock the innumerable space opportunities and possibilities that could help India become a global service provider in space and technology arena.

Adding on, the Atal Tinkering Lab (ATL) was also established in 2021 by the collaboration of NITI Aayog, CBSE, and ISRO to inspire entrepreneurs and the youth of India to participate and contribute to the Indian space sector. These initiatives and reforms have immense capacity to hasten the development of space technology and transform the role of the private sector from being suppliers to independent actors in India.

The government's efforts to include the private sector for optimal exploitation of space resources and technology will certainly revolutionise the space arena. This development can further inspire the youth to build their career in space and technology and participate in research and development, technological innovation, private enterprises and start-ups. With consistency and proper implementation of such reforms, India can build a successful path towards gaining a global market share of more than 10 per cent in the coming years provided that the government, ISRO and the private sector collaborate and blend their ideas and technology for the best interest of the state. ("Major Reforms Transforming Indian Space Sector" 2021)

In the present scenario, the proposals related to space activities from private companies have significantly increased since the government has taken steps toward integrating the private sector with the space sector. These proposals are mainly related to space development projects like developing space technology and services, launching vehicles and satellites, and conducting research. Moreover, private companies like L&T, Adani Group, and Bharat Heavy Electricals Limited have initiated the construction of launch vehicles, which would be the first time involvement of private bodies in such a contribution to space development. This further showcases the rising role of private companies in India's space progress.

Challenges for Privatisation

Although the privatisation of space is believed to have several benefits, it would be wrong to assume that there will not be any challenges and risks. Private participation in the space industry comes with several challenges. For instance, the expectation that private companies will surely deliver the expected results is irrational. The chances that private entities may not fulfil expectations are also high. This is seen in the case of the partnership between NASA and Lockheed Martin for the X-33 space shuttle which turned out to be unprofitable and rather expensive for NASA. In addition to that, there is another issue related to the security of space data which might be misused by the public or private players for personal profits. Thus, unfair commercial concerns add to issues of privatisation as regulating the actions of every private participant is a difficult and time-consuming task.

Critics also claim that IN-SPACe might not have the capacity of establishing a level-playing field amongst the involved private entities. In other terms, there is a possibility for partiality toward certain powerful enterprises. The involvement of private companies in space activities can be challenging due to the possibility of ISRO's interference in space-related areas based on its bureaucratic and power interests.

Another aspect to throw light on is that international law holds the nation-state responsible for the negative-positive actions of private entities. The activities of private companies come with the risk of mistakes or reckless actions. In return, the state is expected to compensate for any loss or blunder which often discourages the very notion of space privatisation. Therefore, there is a need for a coherent framework and space laws that reflects indemnity clarity and investor confidence and well-established norms related to private sector association with space activities.

The brain drain from India due to limited opportunities especially in the science, aerospace and technology sectors has been preventing India from achieving excellence in them. However, the provision of the platform to private players through agencies like IN-SPACe is expected to curb this brain drain by encouraging engagement with Indian start-ups in space development.

Conclusion

India has immense potential to emerge as a leading power in the space arena. Moreover, advancement in space activities would also enable it to not only stretch its industrial base but compete with leading global space players. To ensure that the space potential of private bodies is realised to full capacity in the coming years, ISRO needs to realise its role of becoming an effective enabler beyond only performing functions related to regulations as this would benefit other development projects and programs in the space industry.

India needs to focus on boosting its space programs by increasing the participation of talented scientists and new space entrepreneurs. The space sector would achieve great heights provided that the Indian space sector becomes more flexible than reflecting ISRO's monopoly over all space-

related activities. Both the private and public sectors must be given opportunities to bring out their potential to the fullest. (Ahuja 2021)

Therefore, it can be concluded that the inclusion of the private sector in the Indian space sector is a vital step that needs more attention and consideration, especially at this point so that development and objectives are achieved at the earliest. To help India witness certain success in terms of achieving an efficient and dynamic space sector in the coming decade, the government needs to take actions that ensure that the space industry is not confined or limited to the government and ISRO but private participation and entrepreneurial energy are equally promoted and encouraged so that they can utilise their potential to full capacity. At the same time, this would allow growth of healthy competition and consequently help in finding solutions to space-related issues and challenges along with attracting more capital flows, foreign investments and collaborations. (Bommakanti 2021) The formulation of IN-SPACe, NSIL, ISPA, Antrix Corporation, ATL and NSTP are appreciable efforts taken by the government under the leadership of Modi that exhibit his firm intentions of expanding the space sector under the supervision of ISRO. However, India needs to adopt a more comprehensive approach and take more initiatives that could help build a suitable path for its space journey. To ensure that the abilities of private space companies are used in the right direction, the government needs to collaborate with ISRO and DOS to effectively utilise the available resources, infrastructure and technology, formulate effective policies and support the start-up culture to ensure rapid progress in space capacity. Joint efforts of the Modi government, ISRO, private and public sectors, policymakers, and the young talent of India towards privatisation would help India become a global leader in the space industry and uncover the limitless possibilities that lie ahead in its space path.

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Bibliography

Sinha, Amitabh. 2020. “IN-SPACe explained: what it means to the future of space exploration.” The Indian Express, June 28, 2020. https://indianexpress.com/article/explained/in-space-india-space-missions-private-participation-isro-6476532/.

Devezas, Tessaleno C., Mischel C. Neyra Belderrain, and Maria Cristina V. Salgado. 2013. “The road to privatization of space exploration: What is missing?” Proceedings of the International Astronautical Congress. https://www.researchgate.net/publication/289635460_The_road_to_privatization_of_space_exploration_What_is_missing.

The Economic Times. 2021. “PM Narendra Modi offers ISRO tech, resources for private players to take to space.” October 11, 2021. https://m.economictimes.com/news/india/pm-narendra-modi-offers-isro-tech-resources-for-private-players-to-take-to-space/articleshow/86943091.cms.

Rajagopalan, Rajeshwari P. 2020. “India's Space Programme: A role for the private sector, finally?” ORF. https://www.orfonline.org/research/indias-space-programme-a-role-for-the-private-sector-finally-66661/.

Iliopoulos, Nikolaos, and Miguel Esteban. 2019. “Sustainable space exploration and its relevance to the privatization of space ventures.” Acta Astronautica, (November). 10.1016/j.actaastro.2019.09.037.

Kumar, Chethan. 2022. “nsil: India's 1st space PSU head's job open for pvt sector, nominees from forces can apply too | India News.” Times of India, January 6, 2022. https://timesofindia.indiatimes.com/india/indias-1st-space-psu-heads-job-open-for-pvt-sector-nominees-from-forces-can-apply-too/articleshow/88722739.cms.

Leclercq, Els, and Dorina Pojani. 2021. “Public space privatisation: are users concerned?” (June). https://doi.org/10.1080/17549175.2021.1933572.

Siddiqui, Huma, and Huma Siddiqui. 2020. “Space startup develops India's first in-orbit space debris monitoring, tracking system: Anirudh Sharma, Co-founder and CEO of Digantara.” The Financial Express, July 30, 2020. https://www.financialexpress.com/lifestyle/science/space-startup-develops-indias-first-in-orbit-space-debris-monitoring-tracking-system-anirudh-sharma-co-founder-and-ceo-of-digantara/2032993/.

Mukul, Pranav, and Aashish Aryan. 2021. “Space Association (ISpA), and what it aims to achieve.” The Indian Express, October 13, 2021. https://indianexpress.com/article/explained/indian-space-association-narendra-modi-7565248/.

“Major Reforms Transforming Indian Space Sector.” 2021. IBEF. https://www.ibef.org/blogs/major-reforms-transforming-indian-space-sector.

Ahuja, Udayvir. 2021. “India's space revolution.” ORF. https://www.orfonline.org/expert-speak/indias-space-revolution/.

Bommakanti, Kartik. 2021. “Avoid privileging public sector over private sector in space.” ORF. https://www.orfonline.org/expert-speak/avoid-privileging-public-sector-private-sector-space/.