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The private space sector can shoot for the moon

--Amitabh Kant

The space sector has played a crucial role in the progress of humanity by providing solutions to some of the world's most pressing challenges. From satellite-based navigation and communication services that have revolutionized the way we connect and communicate to remote sensing technologies that aid in disaster management, agriculture, and weather forecasting, the space sector has transformed our everyday lives for the better. Crucially, by opening the door to a deeper understanding of our universe through the use of state-of-the-art technologies, space exploration has inspired innovation in various industries -- begging the question: What else is possible?

The remarkable truth is that these developments are just the tip of the iceberg. According to Morgan Stanley's Space Team, the roughly $350 billion global space industry could surge to over $1 trillion by 2040.With the Indian government's recent reforms and initiatives to promote the private sector's participation in the space industry, India has the potential to capture a significant share of this market. Our tenure as G20 president this year affords us the opportunity to strengthen multilateral cooperation to achieve bolder, brighter, and mutually beneficial policies that develop global space capabilities. If we are to view space as an economic sector, it is essential to encourage the transfer of space technology beyond national borders. This involves facilitating technology trade, fostering partnerships between startups, promoting the exchange of skilled personnel, and attracting investments. The ultimate goal is to develop practical applications of space technology for all of humankind.

Wing Commander Rakesh Sharma, the first Indian in space, once said that astronauts tend to stop seeking their own countries from space when they realise that "there is no boundary between the countries and the entire world is one family where our destinies are integrated." This ethos is reflected in India's approach of Vasudhaiva Kutumbakam' even today – where both responsibility and reward is shared between members of this One Earth, One Family, One Future.

The Indian space program has come a long way since its inception in 1962. ISRO's early focus was on developing capabilities to meet national needs, with the Indian National Satellites (INSAT) and the Indian Remote Sensing (IRS) satellite series providing communication and remote sensing services. Today, the national space agency has achieved several milestones and emerged as a major collaborative player in the global space industry, having launched over 100 satellites for India and other countries, including the Mars Orbiter Mission, which made us the first nation to successfully reach the Red Planet on itsmaiden attempt. What's more,the entire mission cost approximately ₹450 crore, making it the cheapest Mars mission to date. With time, ISRO's efforts have also moved beyond its initial responsibilities by nurturing India's upstream industries and supporting the development of technological capabilities. This growth has resulted in the emergence of more than 500 micro, small, and medium-sized enterprises (MSMEs), public sector undertakings (PSUs), and private industries that have made significant contributions to the Indian space program.

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A second wave of space entrepreneurs have emerged in India with NewSpace startups appearing across the country. Recognizing the changing landscape, the Indian government opened up the space sector to private players in June 2020, and established the Indian National Space Promotion and Authorization Centre (IN-SPACe). This move has been met with an exceedingly passionate response from the industry, with over 130 Non-Government Entities (NGEs) applying to IN-SPACe, with startups, MSMEs, and large companies taking the lead.

Competitiveness, competency, and capital builds good products. The Indian Space Policy, 2023, recognises just this. With an ambitious aim to increase India's share in the global space economy from less than 2% to 10% in the years to come, the Indian government has bet big on the private sector's capabilities, allowing them to build satellites, rockets, and other space-based technologies with minimal to no restrictions.

India's engagement with the final frontier is ready for launch. In the backdrop of this progressive policy, the country's private space sector is already showing rapid growth and innovation, with an exponential increase in the number of startups since 2016. 47 startups were added to the ecosystem in 2021, up from a mere 7 in 2016 reaching a total of 101 cumulatively. Catalysing this surge, investor confidence has also increased in tandem, with funding charting a rising graph from $6 million in 2019, $22.5 million in 2020, $31 million in 2021, to an impressive $80.5 million in 2022.

Skyroot Aerospace, founded by former ISRO scientists Pawan Kumar Chandana and Naga Bharath Daka, has received an incredible $68 million in investment. In November 2022, it proceeded to successfully launch India's first privately-made rocket on a suborbital flight. Ten days prior, Agnikul Cosmos, a rocket manufacturing startup, had successfully test fired a second stage semi-cryogenic engine, showing the range and pace of India's space-tech development. On the satellite front, companies like Pixxel are providing next-gen capabilities in the fight against climate change through advanced imaging. Their third demo hyperspectral satellite, Anand, has the potential to provide priceless earth observation applications in the areas of agriculture, energy, and climate.

These homegrown enterprises, among a host of others,need tocontinue to attract significant, and effective, investments and capitalise on the enabling environment to forge meaningful partnerships with the international community.With the recent policy reforms and initiatives to promote private sector participation, India has the potential to capture a significant share of the trillion dollar market if it plays on its strengths of delivering cost-effective, quality infrastructure, and evolving innovative technology-driven solutions. By focusing in international synergies in the three key areas of manufacturing, energy, and mining in space, India can lead the flight into the final frontier of human development.

**Author is India's G20 Sherpa and ex-CEO, NITI Aayog. Views expressed are personal.*