

Essay Writing

Topic: Are satellites a boom or boon for future space enthusiasts?

In the recent budget session of the re-elected National Democratic Alliance (NDA) Government, an announcement regarding the commercialisation of space technology was made. There were also mentions about New Space India Limited (NSIL) that was recently set up in March 2019. India has made a mark at the global level by becoming a member of an elite group of space-faring countries in the initial phases of its space programmes. It has established its calibre by undertaking missions at costs substantially lower than other space-faring nations. This edge of the Indian technology, as pointed out by our Finance Minister, gives us an upper hand in the commercial market. However, there are also other challenges including that of national security associated with the commercialisation of space technology. In this article, an attempt has been made to look into the boons and the banes associated with commercialising space technology. The Space Programme of

India began much earlier in the 1920s and the 1930s by the independent efforts of scientists like Sir C V Raman. The more institutional form of space research began to take place in the early 1960s, with the establishment of the Indian National Committee for Space Research (INCOSPAR) set up under the leadership of Dr Vikram Sarabhai in 1962. The following year, the INCOSPAR launched its first rocket from Thumba, a small coastal village near Trivandrum. This was the first milestone for India in a long journey of success. The interesting fact was that many of the components of the rocket were actually brought using bicycles and bullock carts and assembled in Thumba.

As the operations of INCOSPAR expanded, it consequently grew to become the Indian Space Research Organisation (ISRO) in 1969.

The Department for Space was also established then. A big milestone for India was with the launch of its first indigenously built satellite, Aryabhata, that was launched using a Russian rocket in the year 1975. In the late 70s, several experimental projects were undertaken for improving domestic communication

through satellites. Another milestone was achieved in the year 1980 with the launch of Special Launch Vehicle (SLV-3) which was developed exclusively in India. In 1984, India managed to send its citizen, Rakesh Sharma to space in an Indo-Russian Collaborative Operation. Over the years, India has managed to send several expeditions to the Moon and Mars. The Chandrayaan and Mangalyaan missions have been testimonies to India's indigenous capabilities. Recently, the ISRO launched Chandrayaan-2, a mission to the dark side of the moon which is presently on its journey towards the moon. When this lands on the moon, India would be one of the very first nations to land on the darker side of the moon. Missions to take man to the Moon and Mars are in progress. India has often done what many other countries have but the hallmark of Indian missions is that they have been carried out with just a small fraction being spent by other countries for similar missions. This makes India's journey to space a unique one. The aspect of commercialisation is not entirely new. A public sector undertaking for the purpose of commercial sourcing of materials

for space missions was set up in 1992. Antrix Corporation Limited, under the Department of Space, is the marketing wing of the ISRO. The major functions of the Antrix include commercial exploitation of space products of ISRO, technical consulting and technology transfer to other space research organisations. As of now, ISRO has launched 239 satellites of 28 countries and all these deals have been negotiated by the Antrix. In the record launch of 2017 when PSLV-C37 launched 104 satellites in one go, making a global record, 101 satellites were launched on behalf of other nations as negotiated by the Antrix.

The involvement of private players in India's space research industry has been one of the important factors that have contributed to its growth. Given the resource constraints that India faces, they have played an active and transformative role for the space industry in India. Commercialisation also seems to be a path for the future. With the emergence of private players like Elon Musk's SpaceX, it has been predicted that over 10,000 space-related start-ups would emerge in the coming decade globally. This

does indicate that it is in fact the right time for India to embrace the growth of the private sector. The present budget which gave huge support for the development of the private sector stands as evidence of the government's approach towards this as well.

However, we are yet to deal with more specific concerns related to the space technology sector. There are major benefits associated with commercialisation, the most important of them being innovation. Engagement of private players encourages innovation in space technology. Many students and think tanks in India have been able to reach unprecedented heights in space technology with their limited resources. Several lightweight satellites using basic materials have been developed. By allowing for commercialisation, they are provided access to technology and resources as well as an opportunity to expand their operations. This will result in a major boost for the space technology sector as a whole, while at the same time encouraging education and research in this area. Given the increased opportunity in this field, many students would be willing to engage in educational courses related to this sphere. This would

also create employment opportunities in space technology, eventually increasing the national income of the economy. This is the perspective with which the idea has been proposed in the budget. However, it is also equally important to consider the problems associated with this proposal. There are indeed some genuine concerns and ambiguities associated with this programme.

Space entrepreneurship is a very challenging experience for many young minds that are attempting to place themselves in upstream or downstream activities of the space business. There are various laws and regulations associated with the setting up and operation of the companies. The law in India has not given adequate scope for the opening of private enterprises. Now with this announcement, there needs to be some clarification with regard to the kinds of changes that will be implemented in the coming years. Another ambiguity is with respect to how the functions of NSIL and Antrix would be different. National security is yet another big challenge ahead of commercialisation. The biggest question is, to

what extent can national security be compromised for economic gains? The nature of the market for space-based technology and space products is yet to be explored. A large section of the population even today is unaware of how most of these products can be incorporated in their everyday life. Legislation yet again remains ambiguous and is a hindrance to the development of space entrepreneurship. National security is also a concern when it comes to space technology, as in many nations it was developed during the Cold War era for the enhancement of their military power. It hence becomes a very important concern while moving forward.

Given these constraints facing space entrepreneurship, the move towards commercialisation needs to address them in constructive ways. Laws need to be amended in ways that address the challenges for commercialisation and encourage entrepreneurship. However, while doing so, national security also needs to be considered as it comes before any economic gain that we could make through commercialisation. India, being one of the advanced

nations with regard to space technology, needs to develop a comprehensive policy when it comes to commercialisation, such that government retains its control and also provides room for private players.