

State, Market and the Final Frontier

EARTH NEWS POLITICAL DESK

In the popular imagination, the story of India's space programme is often told through the triumphs of rockets, satellites and planetary missions. It is a narrative anchored in the achievements of Indian Space Research Organisation, a state-led institution that has, for decades, symbolised technological ambition and scientific self-reliance. Yet, beneath these visible successes, a quieter but equally consequential transformation has been underway. Since 2020, India has embarked on a series of space reforms that are gradually reshaping the structure of its space ecosystem. These changes are not about dismantling the state's role, but about redefining it.

At the heart of this transition lies a distinction that is often blurred in public discourse. The reforms are aimed at commercialisation, not privatisation. The difference is not semantic; it is foundational. While privatisation implies the transfer of ownership and control to private hands, commercialisation seeks to expand participation without relinquishing strategic oversight. India's approach reflects a deliberate effort to open the space sector to innovation and investment while preserving the state's command over critical research and development.

For much of its history, ISRO functioned as an all-encompassing entity. It designed, developed and assembled launch vehicles, satellites and spacecraft, often within its own institutional framework. This model was effective in the early decades, when India's space ambitions were modest and resources limited. However, as global space activity accelerated, this approach began to show its limits. Countries such as the United States and China had already moved towards ecosystems where private industry played a significant role in manufacturing, services and even innovation.

India's delay in making a similar transition was not merely technical; it was institutional and political. The idea of opening the space sector raised concerns about sovereignty, security and the potential erosion of a national asset. When the government first announced reforms in May 2020 as part of its broader economic package, resistance emerged from unexpected quarters. Some groups sought to classify ISRO as an industry under labour laws, a move that would have fundamentally altered its character. Such a classification would have placed a strategic research institution within a framework designed for commercial enterprises, blurring the distinction between sovereign functions and industrial activity.

The government responded by reaffirming the sovereign nature of space activities, placing them alongside defence and atomic energy as domains that cannot be treated as conventional industries. This decision, formalised through legislative changes, was not without controversy. Critics framed it as a step towards privatisation, fuelling anxieties within sections of the workforce and the wider public. Yet, this interpretation overlooked the central objective of the reforms, which was to create a broader ecosystem around ISRO rather than replace it.

The National Space Policy of 2023 provides the clearest articulation of this vision. It explicitly assigns ISRO the role of focusing on advanced research, technological development and the expansion of scientific knowledge. In doing so, it frees the organisation from the burden of routine manufacturing and operational tasks that can be handled more efficiently by industry. The policy envisions a collaborative framework in which public and private actors operate in tandem, each contributing according to their strengths.

This shift is both pragmatic and necessary. The demands on India's space programme have grown significantly, driven by the need for communication, navigation, earth observation and national security applications. Relying solely on a single organisation to meet these demands is neither efficient nor sustainable. By enabling private participation, the government aims to build capacity, diversify supply chains and accelerate innovation.

The award of contracts for the commercial production of launch vehicles offers a glimpse into how this model is unfolding. When a major public-sector enterprise was selected to undertake the manufacturing of the Small Satellite Launch Vehicle, it underscored the government's intent to create a competitive ecosystem. The decision was based on technical capability and performance, not ownership, reinforcing the principle that commercialisation is about expanding capacity rather than transferring control.

At the same time, the state's role remains central. ISRO continues to lead in high-end research, particularly in areas where the risks are high and the returns uncertain. These are domains that private entities are often reluctant to enter without significant support. The government also remains the primary funder of early-stage research, providing the financial backbone for innovation that may take years to mature.

This dual structure, where the state leads in research and the private sector contributes to application and scale, reflects a careful balancing act. It seeks to harness the efficiency and agility of the market without compromising national in-



terests. However, achieving this balance is not without challenges.

One of the most pressing issues is the availability of capital. For India's space startups to thrive, they require sustained investment across different stages of development. The government has recognised this need and created several funding mechanisms, including large-scale funds dedicated to innovation and research. These initiatives signal a strong commitment to building a robust ecosystem. Yet, the pace of deployment remains a concern.

Delays in disbursing funds can have a significant impact on startups, which often operate with limited resources and tight timelines. When financial support is slow to materialise, it can stall projects, deter private investment and undermine confidence in the system. The challenge is not merely to allocate funds, but to ensure that they are deployed efficiently and strategically.

The question of capital is further complicated by the global environment. The space sector is increasingly shaped by geopolitical competition, with countries seeking to secure technological advantage and control over critical resources. In this context, reliance on foreign investment carries risks. While international collaboration can bring expertise and capital, it also raises concerns about intellectual property and strategic autonomy.

India's policymakers are acutely aware of these risks. The emphasis on domestic capital, particularly patient capital that is willing to support long-term innovation, reflects a desire to retain control over critical technologies. Ensuring that Indian startups remain anchored within the national ecosystem is not just an economic objective but a strategic imperative.

At the same time, the global nature of the space industry means that complete isolation is neither possible nor desirable. The challenge lies in striking a balance between openness and protection, allowing collaboration without compromis-

ing sovereignty. This requires a nuanced approach, one that recognises the benefits of engagement while safeguarding national interests.

The broader context of global economic uncertainty adds another layer of complexity. Predictions of increasing competition over capital and technology highlight the need for resilience. In such an environment, countries that rely heavily on external funding may find themselves vulnerable to shifts in global priorities. For India, building a self-sustaining space ecosystem is not just about growth but about security.

The reforms also carry implications for how the space sector is perceived within the country. The conflation of commercialisation with privatisation has created confusion and, at times, resistance. Addressing this requires clear communication. The benefits of commercialisation, including increased efficiency, innovation and capacity, need to be articulated in a way that resonates with both the public and stakeholders within the sector.

Equally important is the need to foster a sense of shared purpose. The emerging ecosystem, comprising startups, established companies and research institutions, must see itself as part of a larger national endeavour. In this framework, private entities are not competitors to ISRO but collaborators, contributing to a collective goal.

There have been instances where misunderstandings have led to disruptions, reflecting the sensitivity of the transition. Such episodes underscore the importance of building consensus and ensuring that reforms are accompanied by dialogue and transparency. Change, particularly in a sector as symbolic as space, is rarely smooth. It requires not only policy clarity but also institutional trust.

As India navigates this transition, it is worth reflecting on what is at stake. The space sector is no longer confined to scientific exploration; it is integral to economic development, national security and global influence. Satellite services underpin

communication networks, navigation systems support transportation and logistics, and space-based data informs everything from agriculture to disaster management.

In this context, the reforms represent an attempt to align India's space programme with the realities of the twenty-first century. They acknowledge that a state-centric model, while successful in the past, must evolve to meet new challenges. At the same time, they recognise that certain functions, particularly those related to strategic research and security, must remain firmly under state control.

The path ahead will not be without obstacles. Balancing public and private roles, managing capital flows and navigating geopolitical pressures will require careful judgement. Yet, the direction is clear. India is not retreating from its commitment to space; it is expanding it, bringing new actors into the fold while preserving the core principles that have guided its journey.

In the final analysis, the reforms are less about changing ownership and more about changing orientation. They signal a move from exclusivity to inclusivity, from centralisation to collaboration. If implemented effectively, they have the potential to transform India's space sector into a dynamic ecosystem, one that combines the strengths of the state with the energy of the market.

The challenge now is to ensure that this transformation remains anchored in national interest. Commercialisation, when understood and executed correctly, can be a powerful tool for growth. But it must be accompanied by vigilance, ensuring that the pursuit of efficiency does not come at the cost of sovereignty.

India's space journey has always been defined by a careful balancing of ambition and restraint. The current reforms are another step in that journey, one that seeks to open new horizons while keeping firm control of the course.

ISRO'S NEXT PHASE