

Opinion: PM Modi's Vision Catapults Nation to Global Space Leadership

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On the tense night of September 6, 2019, as millions of Indians held their breath, Prime Minister Narendra Modi stood shoulder to shoulder with the scientists of the Indian Space Research Organisation (ISRO). During the Chandrayaan-2 mission, the Vikram lander made its attempt at a lunar landing but tragically crashed due to a software error, resulting in the loss of the Pragyan rover as well. Despite the setback, this moment marked a significant chapter in India's space exploration journey, showcasing resilience and determination.

The atmosphere was charged with hope and excitement, a testament to the years of hard work that had gone into making this mission a reality. But when the mission faltered, plunging the room into an eerie silence, a collective fear gripped those present. How would the Prime Minister react? What would be the fate of India's space aspirations?

In that moment of uncertainty, PM Modi did something that would leave an indelible mark on India's space journey. With a calm demeanour that belied the gravity of the situation, he embraced ISRO's chief, not with words of disappointment but with a message of resilience and hope.

The next morning, his speech reverberated across the nation-not as a reprimand but as a beacon of encouragement-a rallying cry for perseverance in the face of setbacks. This was no ordinary response; it was a moment of leadership that would become a defining point for India's space ambitions. PM Modi's personal involvement in ISRO's aspirations marked a significant turning point, igniting a new era of ambition and determination in India's space technology sector.

Fast forward to August 23, 2023, and that spirit of resilience bore fruit with Chandrayaan-3. The successful landing of the Vikram lander on the moon's south pole at precisely 6:03 PM IST was not just a technological achievement; it was a moment of national pride. The Pragyan rover's subsequent exploration of the lunar surface was a testament to the ingenuity and dedication of ISRO's scientists.

To commemorate this achievement, PM Modi declared August 23 as National Space Day-a day dedicated to inspiring the next generation to pursue careers in science and technology. In a fitting tribute, he christened the landing site "Shiv Shakti" and named the point where Chandrayaan-2 had made its impact "Tiranga," symbolising the indomitable spirit of a nation that refuses to be daunted by setback.

Just last month, Chandrayaan-3's success, which made India the first country to land near the lunar South Pole, was honoured with the prestigious World Space Award by the International Astronautical Federation. This recognition reaffirms India's technological prowess and solidifies its position as a leader in space exploration, paving the way for future lunar endeavours, including human exploration.

Under the visionary leadership of PM Modi, India has emerged as a formidable space power with significant global implications. India's space program, known for its cost-effectiveness, has long been a leader in affordable space missions.

Recognising the changing dynamics of space exploration, the Modi government has taken proactive steps to foster innovation and competition within the Indian space sector. Initiatives like the establishment of New Space India Ltd. (NSIL) and the Indian National Space Promotion and Authorisation Centre (IN-SPACe) underscore India's commitment to nurturing a globally competitive commercial space industry. This forward-thinking approach ensures that India remains at the forefront of space exploration and technology.

The achievements of India's space program under Modi's leadership are numerous and varied, encompassing indigenous launch capacity, successful missions to the Moon and Mars, satellite launches into multiple orbits, and the development of a robust national security space infrastructure.

The pace and scale of these accomplishments are unparalleled. As of March 2024, the ISRO has conducted a total of 124 spacecraft missions, including 17 satellites developed by private players or students and 432 foreign satellites launched; additionally, the ISRO has also completed 96 launch missions, six re-entry missions, and projects like POEMS.

A prime example of ISRO's continued innovation is the Aditya-L1 mission, a state-of-the-art coronagraphy spacecraft launched on September 2, 2023. Aditya-L1, which reached its designated orbit at the L1 point-1.5 million kilometres from Earth-on January 6, 2024, is designed to explore the mysteries of the sun's atmosphere, focussing on the corona and chromosphere.

The mission aims to understand the origins and evolution of the solar corona, investigate the processes that heat the corona to millions of degrees Celsius, and develop indigenous technologies for future solar missions.

The Modi government's strategic vision and steadfast commitment to space exploration have propelled India into a position of prominence on the global stage. This vision extends beyond exploration; it includes the development of advanced space technologies, such as anti-satellite technology (ASAT).

Through the successful Mission Shakti test in 2019, India demonstrated its capabilities in ASAT, becoming only the fourth country in the world to do so. This strategic move underscores India's commitment to safeguarding its space assets and participating in global dialogues on the responsible use of outer space.

In alignment with Modi's vision for technological innovation, the PSLV-C43 mission, which launched the Hyperspectral Imaging Satellite (HySIS) in November 2018, represents a significant advancement in studying Earth's surface with unparalleled precision. This mission, which focusses on gathering hyperspectral data across various wavelengths, contributes to a wide range of applications, including agriculture, forestry, geology, and disaster management. HySIS, along with other missions like Astrosat and KalamSAT, exemplifies India's growing role as a key player in the international space arena.

Under the Modi government's auspices, the Gaganyaan mission is progressing diligently, achieving notable milestones. The success of Gaganyaan would not only mark India's entry as the fourth nation-with the US, Russia, and China-possessing human spaceflight capabilities but would also signify a monumental achievement in the nation's space exploration journey.

Looking ahead, India, under Modi's guidance, is poised for further advancements in space exploration. India is setting its sights on the stars with an ambitious plan to establish its own space station by 2035, followed by the historic goal of landing an Indian astronaut on the moon by 2040.

As the nation gears up to achieve a \$100 billion space economy by 2040, these milestones will not only cement India's position as a global space leader but also propel the nation into a new era of space exploration and innovation.

Despite challenges such as limited budgets and technological dependencies on imports, the Modi government's unwavering commitment to space exploration, coupled with increased private sector involvement, bodes well for the future. With continued focus on policy reforms, technological advancements, and ambitious missions, India, under Prime Minister Narendra Modi's leadership, is poised to emerge as a major force in the global space arena, solidifying its position as a frontrunner in space exploration and innovation.

India's ambitious strides in space exploration are not just limited to successful missions and technological advancements. Under Prime Minister Narendra Modi's leadership, the nation has opened new frontiers for global collaboration and innovation by permitting up to 100 percent Foreign Direct Investment (FDI) in crucial space sectors, including satellite manufacturing, operations, satellite data products, and related ground segments.

This strategic move, aimed at bolstering India's space capabilities, has been hailed by experts as a game-changer that will attract prominent international players, support homegrown startups, and stimulate high-tech research and development.

This policy shift not only enables component manufacturers to harness private investments to enhance their offerings, fosters access to cutting-edge technologies, and promotes collaboration with global players to develop next-generation space products, but also places India at the forefront of global space exploration, driving innovation and excellence in this domain.

The ISRO has an ambitious lineup of upcoming space missions, showcasing its commitment to advancing space exploration and technology, such as NISAR, Gaganyaan 1, Gaganyaan 2, Venus Orbiter Mission (Shukrayaan), Mars Orbiter Mission 2 (Mangalyaan 2), and Chandrayaan-4, amongst others.

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