

## Techno-Geopolitics and US Support for India's Quantum Ambition

By Dr. Vibhanshu Shekhar

Allaying obstacles that may have existed before, India and the United States have made it clear that they are entering an era of 'techno-geopolitics.' Amid the intensifying [China-US tech rivalry](#), the United States, betting big on India's long-term technological prospects and its pivotal role in Indo-Pacific geopolitics, has forged 'a [technology partnership for the future](#)' during the State Visit of Indian Prime Minister Narendra Modi to the United States in June 2023. The US-India [Joint Statement](#), released at the conclusion of the State Visit, is a comprehensive iteration of all the major facets of new and emerging technologies and, therefore, rightly claims that 'no corner of human enterprise is untouched by the partnership.'

**Dr. Vibhanshu Shekhar**, Adjunct Professor at American University, explains that the United States is "betting big on India's long-term technological prospects and its pivotal role in Indo-Pacific geopolitics..." and "[o]ne of the key elements of the all-encompassing US-India Technology Partnership is American support for India's ambition in quantum technology"

One of the key elements of the all-encompassing US-India Technology Partnership is American support for India's ambition in quantum technology, which comes at a critical juncture when India is making big plans and investments in this field. With a budget of \$730 million, New Delhi unveiled a [National Quantum Mission](#) (NQM) in April 2023 that seeks to develop a quantum computer with a computing capacity range of 50-1000 qubits and quantum communications over 2000 kilometers by 2031. To accelerate innovation in these areas, India will set up, as a part of NQM, [four quantum hubs](#) that will focus on the "generation of new knowledge through basic and applied research." However, the actual approved budget for the national quantum mission decreased by 40% from the proposed US\$1.2 billion in 2021 when the NQM was first announced. This contraction was due to both government-led cuts and depreciation in the market value of the Indian rupee.

The United States and India have set up a [Joint Indo-U.S. Quantum Coordination Mechanism](#) with participation from industry, academia, and government. Together, they will work towards developing "[a comprehensive Quantum Information Science and Technology agreement.](#)" The joint mechanism intends to facilitate research and collaboration in a field that remains largely underexplored and [commercially unscalable](#).

To promote bilateral quantum training and exchange programs and provide financial support to the bilateral innovation efforts, the two countries have set up a [US-Indian Science and Technology Endowment Fund](#) and launched a grant program of \$2 million. The grant program would support 'joint development and commercialization of AI and quantum technologies' and promote public-private collaborations to develop high-performance computing (HPC) facilities in India. However, the \$2 million grant program is negligible in the context of supporting high-end research and innovation in the field of quantum technologies.

The US-India quantum cooperation builds on the complementary nature of their tech engagement where the US brings the hardware and market, and India brings a large pool of talent. The overwhelming presence of Indian talent in the American tech market has earned them the nicknames of '[tech mafia](#)' or '[new tech titans](#).' In addition to broadening the exchange of ideas and best practices, the involvement of the Indian tech diaspora will also facilitate the growth of domestic talent in the field of quantum technologies, which is only beginning to gain traction in India. Moreover, though New Delhi has not been able to register quantum-related patents, Indian talent has enabled outside businesses to secure many quantum-related patents. IBM, a leading US-based quantum company, received the [second-highest number of patents](#) in 2018, supported largely by contributions from the India chapter.

The US-India quantum partnership is an important step in India's attempt to balance domestic deficiencies through international partnerships. India has forged collaborative arrangements with other countries active in the field of quantum technology, such as Australia, Finland, and France. Moreover, these collaborations are not confined to inter-governmental arrangements but also involve academic institutions and businesses.

In fact, US support would plug an important gap in India's quest for quantum tech—access to a robust quantum ecosystem. This access is essential for the development of quantum research and technologies in India. The issue of ecosystem becomes important as India is a new entrant into the global race for quantum tech whereas the United States remains the lead player. Underscoring the importance of the ecosystem, the Indian Institute of Technology (IIT) Madras has [entered an arrangement](#) with IBM through which IIT researchers would be able to build and strengthen their quantum computing skills using IBM's cloud-based quantum computing systems. IBM is planning to roll out a [quantum computer with a 4000-qubit processor](#).

In addition to bilateral collaboration, the US-India quantum partnership enables Indian agencies to enjoy the benefits of a global pool of research on quantum technologies by connecting them with third-country scientific institutions that are working with American partners. The US-based [Quantum Economic Development Consortium](#) (QED-C), a consortium of institutions headquartered in 39 countries, opened its membership in June 2023 to India-based institutions and businesses engaged in the quantum industry. India will also be joining the [Quantum Entanglement Exchange](#) through which Indian students and researchers will be able to connect with their counterparts from 12 other countries.

The US overture to share Quantum computing research, which the White House has identified as [a critical and emerging technology vital for the country's national security](#), amplifies India's geopolitical importance in the US strategic calculus and the willingness to build a robust tech-centric alignment with India. However, the partnership is not without challenges as there exist various barriers that require political will to overcome. The futuristic nature of the quantum tech underlines that the two countries would have to ensure long-term commitment as their partnership will be periodically tested. For India, the test will be providing continuous financial and political support to domestic quantum research efforts, which may not yield quick results. For the United States, the test will be sharing infrastructure and technology. Current and future presidential administrations will have to work with the US Congress to allow the export of high-performance computing (HPC) technologies to India.

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