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AN INTERVIEW WITH JOAN JOHNSON-FREESE

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The Indian Space Research Organization's latest budget [allocated \\$25 million](#) to a plan to send an orbiter to Mars to study its atmosphere. In an email interview, [Joan Johnson-Freese](#), a professor of national security affairs at the Naval War College who writes in a personal capacity, discussed India's space program.

**WPR:** *What is the current scope of India's space program, and what are its priority programs, both short-term and long-term?*

**Joan Johnson-Freese:** The scope of India's space program has recently expanded significantly. Dr. Vikram Sarabhai, considered the father of India's space program, unambiguously stated its original purpose as being focused on the application of advanced technologies to the real problems of humankind and society. Toward that end, the Indian Space Research Organization (ISRO), created in 1969, focused on areas like communications and Earth observation, and India was among the first countries to use space technology for developmental health purposes, such as locating areas of heavy standing ground water, so that the government could then spray there for malaria-carrying mosquitos. Sarabhai also stated that India did "not have the fantasy of competing with economically advanced nations" in areas like exploration of the moon, planets and manned space-flight.

Now, however, India's space strategy -- [Space Vision India 2025](#) -- includes a full range of space ambitions, including human spaceflight, reusable launch vehicles, navigation systems and imagery. In fact, India seems to be challenging the regional space leader, China, in an unacknowledged Asian space race. ISRO officials have unofficially cited ambitious dates ranging from 2014 to 2017 as the target date for their first manned mission, with a lunar landing as early as 2020.

**WPR:** *In what areas is India's space program indigenous, and who are its main partners and in what areas?*

**Johnson-Freese:** Although Russia launched India's first satellite, India's space program is largely indigenous. For its ambitious future plans, its lift vehicles still face problems. Its largest launch vehicle, the Geosynchronous Satellite Launch Vehicle, has experienced several failures, and the Mark III successor is still in development. India has had difficulties with its spacecraft as well. The Chandrayaan-1 robotic lunar probe failed prematurely, though not before returning a significant amount of data. ISRO has cooperation agreements with many countries, including the United States and Russia. Chandrayaan-2, scheduled for launch in 2014, is a joint venture with Russia. India has also pushed hard for access to more dual-use space technology from the United States, valuable to both the civilian and military space communities.

**WPR:** *To what degree is India's space program integrated into a broader policy framework, including defense and security, but also diplomacy and technological partnerships?*

**Johnson-Freese:** Former Indian President A.P.J. Abdul Kalam, also an ISRO and Defense Research and Development Organization aerospace engineer, wrote a book prior to his presidency

called “India 2020,” which largely explains the context for India’s space plans. India wants to be a developed country, not a developing country. Space technology is considered a critical technology in achieving that goal through its connectivity to fields from education to defense. Space requires technology; technology means industrialization, which yields economic growth.

Further, following China’s lead, India is expanding both its civil space capabilities and its military space capabilities, including capabilities required for both missile defense and anti-satellite weapons. India seems convinced that countries will acquire space weapons or are already doing so. It wants to be among the “haves” rather than the “have nots” if Nuclear Non-Proliferation Treaty-style distinctions are made at some point regarding which countries are allowed to do what in the future.

While not a member of the Beijing-headquartered Asia-Pacific Space Cooperation Organization, India does participate in the Japanese-initiated Asia-Pacific Regional Space Forum. India has not been as proactive as China in using space technology to form bonds with other countries, particularly other developing countries. Its joint missions and data-sharing agreements have been primarily with space agencies from countries such as Russia, the U.S., Italy, France and Canada, though it also shares data through multi-agency bodies, especially in the area of disaster management. Recently, however, ISRO initiated a program called Sharing of Experience in Space to train scientists from developing countries on various space applications. □