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## China Walks the US-India Space Solar Power Dream

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While India and the US make pledges about potential collaboration on space, others walk those promises and potentials. In the India-US context, space has remained a potential area of cooperation for the last decade or so whereas China, which has studied the Indo-US joint communications carefully, has made fast progress on space-based solar power (SBSP), in terms of devoting financial and human resources into the project. The need of the hour is for democracies like India, US and may be even Japan to come together, structure large collaborations around space and capture the political space in this regard. The political leadership in both India and the US should recognise the importance of it and act accordingly before it is too late.

Recognising the spin-off benefits of space-based solar power, China recently unveiled a plan to build and orbit a solar power station for commercial use by 2040. The Chinese plan drawn by one of its space pioneers Wang Xiji is an ambitious one and aims to look at various aspects of space-based solar power applications, designs and key technologies that would make the option economically feasible in the first instance and sustainable by 2020. Detailing the research conducted by the China Academy of Sciences, Wang said at the fourth China Energy Environment Summit Forum: "The development of solar power station in space will fundamentally change the way in which people exploit and obtain power. Whoever takes the lead in the development and utilization of clean and renewable energy and the space and aviation industry will be the world leader."

Given China's rising energy requirements, it is imperative that Beijing look at alternate sources of energy to meet its enormous demand. By 2050, it is estimated that China would have an energy gap of approximately 10.5 percent which it would seek to fill in by exploring alternate sources of energy such as fusion and space power stations. Also, the greenhouse gas emissions and climate change considerations have become serious enough concerns for the international community. These factors have also pushed Beijing to invest more in low-carbon energy sources. SBSP is possibly on top of the options list for China given the safety concerns vis-à-vis nuclear energy, particularly after the Fukushima crisis. According to the China Academy of Space Technology (CAST), the Solar Power Satellites (SPS) and solar power applications will help China in sustaining its economic and social development, disaster prevention and mitigation and would also assist in retention of qualified personnel.

China has been working on this concept for several years with CAST spearheading its research work. After the initial feasibility report compiled by CAST, a concept design for the SPS was submitted to China's Ministry of Industry and Information Technology, which eventually gave the approval and funding for the design. According to CAST, the SPS development includes four parts - satellite launching, in-orbit construction/multi-agents, efficient conversion of solar energy and wireless transmission. Apart from the launch factor, an area where China has excelled significantly, other parts of the project will demand greater effort for development.

While China's lead in the SBSP could provide for a co-operative framework in Asia, the geopolitical realities and the inherent problems in Asia - competition, rivalry and mistrust - may hamper such collaboration in the near future.

Under such a scenario, there lies a strong imperative for India, the US and other like-minded democracies to come together and realise the SBSP utilisation dream. This will not only provide economic gains but also give a strategic advantage in the changing security environment in Asia. For India, such collaboration would meet its growing energy demand and provide other spinoff benefits like job creation and access to advanced technology, much-needed for sustaining India's growth story. It is estimated that India's energy requirements would double by 2030, making it imperative for it to explore other feasible options. Also, if India becomes a part of the process of realising the SBSP dream, it will augment India's position in Asia as well as the world as a responsible leader.

The political consensus for India and the US to collaborate in space already exists although it appears that each side has been leaving it to the other to take the initiative and materialise the potential. The US-India Agreement to establish an S&T Board and an endowment for research provides the apparatus needed for starting the SBSP research and development. This fund can finance a broad number of issues of mutual interest such as bio technology, advanced materials and nanotechnology science, clean energy technologies, basic space, atmospheric and earth science. SBSP easily fits into the sphere of issues supported by this fund. As far as other funding options are concerned, private sector companies on both sides have shown interest in exploring the SBSP option. US companies like Lockheed Martin, Northrop Grumman and Tata in India have shown positive signs. Other countries like Japan have also done considerable research in this field. Japan's Aerospace Exploration Agency has done decade-long research on SBSP in collaboration with high-end technological companies such as Mitsubishi. Collaboration among these countries would also facilitate funding for this ambitious project.

While China may not have developed the best model in terms of cost effectiveness, it will surely send out a strong message to the international community about China's capabilities in developing such technologies and its ambitions to become the global leader in space solar power harnessing. If China

wins the race in developing SBSP as a feasible source of energy, which would meet the world's growing energy demand, it will result in huge economic and strategic gains for China.

It is now time for both India and the US to explore the opportunity seriously and not let prospects for cooperation remain only as prospects. Hopefully, the advent of China into the picture would give the much-needed push for both countries to actually start real-time development work on SBSP.

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