



Centre for Air Power Studies (CAPS)

Forum for National Security Studies (FNSS)

78/17

INDO-ISRAEL SPACE CO-OPERATION: THE WAY AHEAD IN STRATEGIC COLLABORATIONS

Wg Cdr TH Anand Rao
Research Fellow, CAPS

Keywords: Outerspace, Space cooperation, India-Israel, GEO-LEO Optical Link.

India's space programme has come a long way and the country today is being acknowledged as an established space power. Even as India has journeyed for close to sixty years in this domain, there are several requirements that need to be addressed for India to maximise its gains and the potential of its strong capacity to build satellites and launch vehicles. A hallmark of India's space programme has been international co-operation which needs to be taken ahead in the right direction. While India is already implementing a vision to develop an ecosystem that will encourage and enable SMEs as well as space entrepreneurs to develop products and services that are of global standards, there is a need to leapfrog and adapt to emerging technologies, like micro satellite propulsion, reusable launchers, cubesats and autonomous rendezvous technology.

International co-operation in hi-tech high cost projects like space programmes is beneficial for several reasons. Foremost is the need to maximise benefits while optimising resource utilization and making the project economically viable. Technological co-operation is often seen as a tool used to build trust and establish strong relationships between nations. The convergence point of India and Israel lies in the fact that both countries have a similar timeline of existence. India's first independent launch took place in July 1980; Israel's, in 1988. These launches brought India and Israel into the category of space faring nations. While Israel chose to create a space programme because of its security challenges and strategic difficulties it faced in the region, India on the other hand, as the leader of the non-aligned nations, chose to invest in space because of demographic, economic, technological and scientific challenges. Due to the requirement of achieving larger space capabilities, India went

from developing independent capabilities to enabling the adoption of technologies in certain areas. Israel on the other hand was the natural ally for US and had an advantage in transfer of technology to its benefit. The change in direction that each of the two nations experienced, provides the basis for cooperation in the field of space.

Israel's space programme has been highly pragmatic, and focused on national security. Nevertheless, in recent years, the Israel Space Agency began to implement new space programmes for societal wellbeing and scientific research. Co-operation with India in scientific and exploratory missions will enable India to accelerate projects of this type, and at the same time, Israel can take part in existing programmes utilising its complementary capabilities. Co-operation in military capabilities would be inevitable but should be carefully deliberated. Thus, cooperation between India and Israel in space will fulfil the needs and ambitions of both nations, and show the world that even with modest budgets, objectives in space activities can be achieved. A broad spectrum of possibilities exist.

Indian Space Research Organization (ISRO) has already been working with and shares resources with international agencies on collaborative projects. ISRO and NASA's NISAR (NASA-ISRO Synthetic Aperture Radar) satellite, for instance, is a joint project between NASA and

ISRO to co-develop and launch a dual frequency synthetic aperture radar satellite which is planned for launch in 2020-21.¹ India's collaboration with Israel in the fields of communication and aeronautics is low compared to India's cooperation with other countries like the US, Russia and countries of the European Union. In 2011, Israel had supplied India with a radar imaging satellite, later named RISAT-2. Three nano satellites from Israel were among the 104 satellites launched by ISRO in its record-breaking feat in February 2017. ISRO is looking for greater cooperation with Israel Space Agency (ISA) as both countries have specializations in specific areas. India has established itself in the satellite launch capabilities and satellite design and manufacture segment, while Israel is a frontrunner in small satellite and electronic systems.

Key projects are being formalized in space technologies with ISA, taking forward a co-operation agreement signed between the two during the visit of India's Prime Minister to Israel in July 2017. The agreement mainly focused on developing technologies in the areas of electric propulsion for the small satellites, atomic clocks and GEO-LEO Optical Link. The electric propulsion system is critical for miniaturization of satellites and also for launching heavy-weight satellites by reduction of fuel weight. The optical communication technology transmits data, using light, from satellite to the earth station and also creating a link between satellites in LEO and

GEO. The cooperation on atomic clocks assumes greater significance after the atomic clocks onboard IRNS-1A, a satellite of India's regional GPS constellation, failed, necessitating the launch of IRNSS-1H. These rubidium atomic clocks, imported from a European manufacturer, are meant to provide precise location data. These were part of the seven agreements announced between the two countries as a part of India and Israel strategic partnership in the fields of water, agriculture and space and also included a \$40 million joint fund for research and development in innovation.² The agreement will put into motion ISA collaboration with other Indian companies. ISRO can look forward to carrying more satellites from Israel as well as receiving important technology support in developing small, high-resolution radar imaging satellites.

India is the third-largest Asian trade partner of Israel, and tenth-largest trade partner overall. The strategic collaboration agreements will be beneficial for both countries. Building of small satellites in India by private companies from both sides and launch by the PSLV, will give a boost to the domestic space industry. Israel has limitations for launch of satellites due to its geographical location, and needs partners like India who have reliable launch capabilities. The electric propulsion technology collaboration is essential for India and is the highlight of the agreement. Though ISRO does not use electric propulsion now, tie-ups for future satellites are crucial. The advantage is, it will help reduce the

weight of the satellite, which in turn means that the launch vehicle can carry more satellites. Lighter satellites and more weight-carrying capacity will translate into bigger commercial market. Long term strategic collaborations with emerging space powers like Israel is definitely a win-win situation for both countries.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes

¹ ISRO partnership, Jet Propulsion laboratory ,at <https://nisar.jpl.nasa.gov/isropartner/#>, accessed on September 24, 2017

² 'Indian Space Agency, Israeli counterpart to formalize strategic collaborations', 28 August, 2017, at http://www.spacedaily.com/reports/Indian_Space_Agency_Israeli_counterpart_to_formalize_strategic_collaborations_999.html, accessed on September 24, 2017.