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INDIA'S 20 SATELLITE LAUNCH: USING THE WINDOW OF OPPORTUNITY WHILE IT LASTS

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Background

On the 22 June 2016, ISRO using the Polar Satellite Launch Vehicle PSLV-C34 launched 20 satellites in a single mission thereby improving on its previous record of launching 10 satellites together in April 2008. The launch is significant in many more ways than one. It demonstrates India's cost-effective launch efficiency across the world, ignites young minds across the country and in brief beefs up national pride and prestige like nothing else. It also brings in foreign exchange for the country and significantly enhances international cooperation.

The Impact on Commerce & International Cooperation

The amount of revenue earned is significant considering that the commercial arm of ISRO, Antrix had until Dec 2015 earned revenue of US \$ 17.7 Million and Euro 79.98 Million by launching 51 satellites from 20 countries. The trend is expected to continue with Antrix likely to earn revenue of US \$ 4.54 Million and Euro 63.91 Million by launching 25 satellites from 7 countries during the period 2015-2017¹. With regards to enhancing national pride and furthering international cooperation, ISRO with its 'work-horse' PSLV has a track record of 30 successive flight successes and a proven capability to carry out different types of missions [viz., Low-Earth Orbit – low inclination to sun-synchronous; Sub-Geo-synchronous Transfer Orbit (Sub-GTO); Geo-synchronous Transfer Orbit(GTO)] and also with ability to launch multiple satellites in a single mission, has emerged as one of the most competitive and reliable launch service providers in the world. As of December 2015, Antrix has signed Launch Service Agreements(LSA) with Companies/ Space Agencies from 7 countries viz., Algeria, Canada, Germany, Indonesia, Japan, Singapore and USA, for launching 25 more satellites. The



gains in international cooperation are significant in the endeavour. They are also significant in the present launch considering the various payloads of different countries given as below.

PAYLOADS ON PSLV C-34 LAUNCHED ON 22 JUNE			
Payload	Mass (Kgs)	Nationality	Type
Cartosat-2	727.5	India	Earth Observation, Cartography
Lapan-A3	120	Indonesia	Earth Observation
M3M Sat	85	Canada	Tech demonstration, AIS
GHG Sat	25.5	Canada	Earth Observation
Biros	130	Germany	Scientific observations
Sky sat Gen2-1	110	US	Earth Observation
Dove-12 sats	4.7 X 12	US	Earth Observation
Sathyabamsat	1.5	India	Green House Gases
Swayam	1	India	Ham Sat

The total payload carried is nothing more than 1,288 kgs. What is significant herein is the ability to undertake precise injection of the payloads into their respective orbits. The aspect is best captured in the simple eloquence of the ISRO Chairman, A.S. Kiran Kumar, *“Once you give a particular release command, all of them have to be operated at separate instances of time. And at what velocity each of them [satellites] is released. So, there are a number of mission analyses which are required.”*²

At an international level, India now emerges as a formidable player enabling multiple payload launches at a very reasonable cost. Apart from satellites, it also provides a cost effective solution for undertaking a wide variety of scientific experiments. A wide variety of payloads can be placed in orbit at very reasonable costs and consequently the options for conventional and strategic users increase manifold.

Comparative Analysis

To assuage the impact of India’s multiple launch capability in the international multi-launch market, it would be essential to have a brief overview of similar launches and the same is placed as below.

Date of Launch	Launcher/Country	Number of sats, payloads launched
April 2007	Dnepr/Russia	14
Nov 2013	Minotaur/US	31
Nov 2013	Dnepr	32
Jan 2014	Antares	34
Jun 2014	Dnepr	37

Evidently, multi-satellite launches have taken place in the past and at launches of 37 or 34 payloads launched at a time, they far surpass those of India. The numbers are a dampener.

However, the distinguishing aspect is the cost. India's PSLV is far cheaper at around \$ 15 Million as opposed to the US' Minotaur launch in Nov 2013 that cost a whopping \$ 28.8 Million³. On similar lines, the approximate cost of a single Dnepr launch ranges between US\$24 and US\$30 million⁴. India aims at further reducing the cost of launch and with regards to both the US and Russia, the costs are only expected to rise. At half the price, India already presents a great opportunity to the world that would only get better once the prices are slashed further. Further, the Russian-Ukrainian Dnepr rocket program, which captured a significant share of the small satellite launch market over the last 15 years, has been halted by deteriorating relations between the those two nations. The relations are not expected to change overnight and hence India could do well to ride purposefully on the advantage. The opportunities are not lost on foreign players also; for instance companies like Spaceflight Industries, a Seattle-based firm that arranges rideshare launch opportunities for small satellites, convinced the U.S. government to grant waivers for U.S. satellites to launch on PSLV missions starting last year.

The problem with opportunities is that they are short-lived. The case herein may be no different. A variety of launch platforms that enable launch at reasonable costs as also multiple launches by a variety of countries and private agencies are on the anvil. More and more nations and private players see a variety of purposes in space and the market is only expected to burgeon. It makes sense for India to assess the window of opportunity comprehensively and carry forward its advantage till the time it lasts.

(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 Ref reply of Dr Jitendra Singh in response to starred question to Indian Parliament at dos.gov.in/sites/default/files/LU%202866.pdf accessed on 20 Jun 2016.

² Ref Sputnik news, "Indian Space Agency embarks on launch of 22 satellites on single mission", *Sputnik News*, 16 Jun 2016 at <http://sputniknews.com/science/20160616/1041465787/india-satellites-space.html> accessed on 17 Jun 2016.

³ Ref Stephen Clark, "Student built satellites, military payloads put into orbit", *Space flight Now*, 19 Nov 2013 at <http://spaceflightnow.com/minotaur/ors3/131119launch/#.V2omXf97IU> accessed on 21 Jun 2016.

⁴ Ref Pavel Luzin, "Russia to re-start launch of Satan ICBM", *Russia & India Report*, 30 Jul 2015 at https://in.rbth.com/economics/2015/07/30/russia_to_re-start_launches_of_satan_icbm_44495 accessed on 22 Jun 2016.

