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Steady rise in budget allocation for DRDO

New Delhi: There has been a steady rise in the budgetary allocation of the Defence Research Development Organisation (DRDO) since last three years, the Centre said on Wednesday, emphasising that it has been supportive of providing additional funds for the agency on need basis.

In a written response to a question in Lok Sabha, Minister of State for Defence Shripad Naik said Rs 13,501 was allocated to the DRDO in 2016-17. It increased to 15,399.25 and 17,121.99 in 2017-18 and 2018-19.

Naik said Rs 19,021.02 has been allocated for 2019-20.

It said the DRDO has created five young scientists laboratories to produce innovative and out-of-the-box solutions to meet the needs of the armed forces.

The five labs are Artificial Intelligence in Bengaluru, Asymmetric Warfare Technology in Kolkata, Cognitive Sensor Technology in Chennai, Smart Materials in Hyderabad and Quantum Technology in Mumbai.

In response to another question, he said modernisation of the DRDO is a continuous process, wherein new technologies, systems, sub-systems are indigenously developed for armed forces.

In addition to this, modernisation of infrastructure facilities is also continuously taken up to support these activities.

He said performance audit of DRDO labs was done on case-to-case basis by authorities in the last few years. Apart from this, the DRDO has been audited by a number of committees like the Kelkar panel committee.

Its suggestions like inclusion of representatives of Council of Scientific and Industrial Research (CSIR) and Indian Space Research Organisation (ISRO) in the Defence Research & Development Board have been implemented.

"On the recommendations of Kelkar Committee, Rama Rao Committee was constituted in February 2007 by the government on matters related to the DRDO. Suggestions under the purview of DRDO have been implemented," he said.

In reply to a separate question on Akash Missile, Naik said it is an indigenous surface to air weapon system, designed and developed by the DRDO. It has been deployed by the Indian Air Force (IAF) and the Indian Army (IA) in combat areas.

In recent development, Short Range Surface to Air Missile (SRSAM) global case has been withdrawn and also awarded to Akash with upgrades of Seeker Technology, Reduced footprint for weapon system elements, 360 degree engagement capability and high altitude/low temperature operation, which is named as "Akash Prime".

(Disclaimer: This story has not been edited by Outlook Staff and is auto-generated from news agency feeds. Source: PTI)

<https://www.outlookindia.com/newscroll/steady-rise-in-budget-allocation-for-drdo/1672152>

Minister of Defence Rajnath Singh calls for increased synergy between DRDO and industry to achieve self-reliance

Ministry of Defence has set the target of \$26 billion for aerospace, defence services and goods by 2025

Recently Defence Research and Development Organisation organised DRDO Industry Synergy Summit 2019 in Hyderabad. In a video message, Defence Minister Rajnath Singh welcomed the synergy being created for boosting the indigenous development of defence systems and technologies. He said, DRDO is taking crucial steps for attaining self-sufficiency in the area of defence systems development. The DRDO has been contributing towards research, design and development of many defence technologies in the areas of missiles, fighter aircrafts, naval systems, electronic warfare, radars, sonars and armament systems since its inception.



“Raksha Mantri said, under the Defence Production Policy, the Ministry of Defence (MoD) has set the target of \$26 billion for aerospace, defence services and goods by 2025”

Raksha Mantri said, under the Defence Production Policy, the Ministry of Defence (MoD) has set the target of \$26 billion for aerospace, defence services and goods by 2025. In this, approximately \$10 billion is targeted for creating job opportunities for 20-30 lakh people.

Highlighting the various initiatives of Government to encourage innovation and self-sufficiency in the defence sector, Rajnath Singh stressed on the need for excellence in the field of defence innovation and their adoption. He said, Defence Public Sector Units (DPSUs), Industry, research institutes and services need to work in tandem to achieve the target of incorporating at least 25 Artificial Intelligence based products into defence in near future.

The minister appreciated that DRDO has nurtured more than 1,800 industries which are actively working together to produce defence systems. He asked the DRDO and industry to explore new ways for enhancing synergy to achieve the goal of self-sufficiency.

In his address, Secretary, Department of Defence, Research & Development and Chairman DRDO Dr G Satheesh Reddy elaborated about among others the latest policies of DRDO like Zero Transfer of Technology (ToT) and Zero Royalty for Development-cum-Production Partners (DcPP) and free usage of DRDO patents by domestic Industry. Expressing confidence in defence industry, he said, healthy scenario is to be fostered for closer interactions between Industry and DRDO to overcome the gaps.

The DRDO Chairman highlighted that of late industry base has greatly widened from mere manufacturing to development and designing of components and sub-systems. He said, the Indian Industry has matured from ‘Build from Print’ to ‘Build from Specifications’. A panel discussion chaired by Chairman DRDO was also held. Many concerns were raised and suggestions were given by the industry participants. It was communicated that constructive suggestions will be duly taken into account in the upcoming policies for improvement of the functioning of the system.

Some industry representatives shared their experiences of working in the defence sector and spoke about the challenges faced by startups and MSMEs in manufacturing and exports. Senior officials of DRDO and around 300 Industry representatives were also present on the occasion.

<https://www.manufacturingtodayindia.com/sectors/5628-minister-of-defemnce-rajnath-singh-calls-for-increased-synergy-between-drdo-and-industry-to-achieve-self-reliance>

India's Balakot-proven eye-in-the-sky fleet to have a boost with new programs

By Alice Jacob

India is speeding up the purchase of aircraft to enlarge its own fleet of airborne early warning and control aircraft (AEW&C) for peeping deep to the Pakistani territory throughout Balakot-like paths. The ministry underneath Defence Minister Rajnath Singh will soon sanction the purchase of two Airbus A330 platforms such as adding to India's fleet.

The Defence Research and Development Organisation (DRDO) will match it using indigenously designed Netra system which contains an innovative active electronically scanned array (AESA) radar which provides a 360-level view from the stage. Seemingly, DRDO has selected a 330 for its loiter interval compared to Russian-built Illushin IL-76 where India has mounted that the Phalcon system jointly produced by Russia and Israel.



Mirage-2000 jet: The most ferocious IAF fighter

The Indian Air Force (IAF) best brass was content with the operation of both Airbus A330-mounted Netra techniques which tacked and directed that the Mirage 2000-5 assault formation which destroys the Jaish-e-Mohammed (JeM) coaching camp in Balakot, roughly 80km flying distance in the point of control (LoC) in Kashmir.

The attack February 25 would be to avenge the Pulwama terrorist bombing of a paramilitary convoy at Jammu and Kashmir killing dozens of paratroopers.

The inadequacy of this AEW&C fleet of the IAF was sensed if the worries following a foiled Pakistan Air Force (PAF) incursion bidding contributed to skirmishes along with the shooting down of an F-16 fighter airplane from MiG-21 Bison flown by Wing Commander Abhinandan Varthaman, that dropped his own aircraft however firmly bailed out.

Pakistan set to maximum use its six Saab 2000 early warning aircraft according to a study on the site of the Economic Times. The excellence in numbers may have helped Pakistani lead greater aircraft to European goals throughout the standoff, it's reported.

The government of Prime Minister Narendra Modi eliminated the Rs 5, respectively 200 crore strategic programme to come up with the next-generation airborne warning and control systems (AWACS) which will work as a significant force multiplier for IAF in 2015. The DRDO is predicted to induct its newest early-warning platforms to the IAF by 2025 after producing structural alterations and adaptations for matching the 10m rotodome which is going to be mounted onto the aircraft.

Indian Space Research Organisation (ISRO), meanwhile, is still continued to deploy its constellation of low earth orbit satellites which will help in the navigation of aircraft. The notion is to prevent based on navigation satellites from different nations during times of battle to prevent data flow.

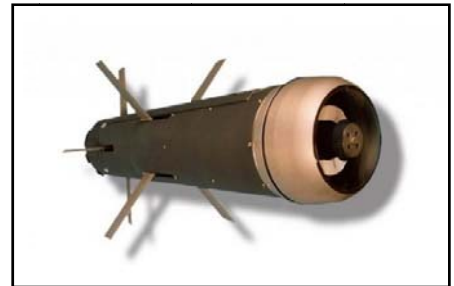
<https://thenewspocket.com/indias-balakot-proven-eye-in-the-sky-fleet-to-have-a-boost-with-new-programs>

Lethal Israeli anti-tank guided missile ‘Spike’ inducted by Indian Army along LoC

The "fire and forget" come with a range of up to 4 Kms and are used to not only destroy bunkers and shelters but also training camps that have come close to the LoC

New Delhi: In an effort to further strengthen India’s border with Pakistan along the Line of Control (LoC) in the Northern Command, the Indian Army has decided to induct anti-tank guided missiles (ATGMs) ‘Spike’. The ‘fire and forget’ ATGMs ‘Spike’ manufactured by Rafael Advanced Defence Systems of Israel, The “fire and forget” come with a range of up to 4 Kms and are used to not only destroy bunkers and shelters but also training camps that have come close to the LoC.

The Indian Army needs almost 70,000 different types of ATGM and 850 different launchers. The Israel Company has delivered 210 missiles with 12 launchers in an “emergency purchase” mechanism in a deal worth Rs 280 crore deal for the Indian Army. This step was initiated after the Pulwama attack by Pakistan earlier this year followed by an attack by the Indian Air Force’s (IAF) on terror camps in Balakot, inside Pakistan.



According to sources, the Indian Army had placed the order for these ATGMs with the Israeli company to meet ‘operational preparedness.’ These missiles have the capability to be deployed in different terrains including the mountains and plains and also are capable of being fired from different platforms including helicopters, ships, and from the ground.

Earlier this year, as has been reported earlier, Kalyani group and Rafael Advanced Defence Systems commissioned had commissioned a Rs 70 crore anti-tank guided missile production facility in India.

In the joint venture Kalyani -Rafael Advanced Systems, 51 per cent of its ownership with the Indian company Kalyani group which has become the first company from the private sector to set a manufacturing base for such a weapon system in India.

Earlier this year, the Defence Acquisition Council had approved Rs 12,000 crore Milan-2T anti-tank missiles for the Indian Army, 5,000 Milan 2T anti-tank guided missiles from France.

Though the Defence Research and Development Organisation is already working on ‘Nag’ which is still in the development stage, for its urgent requirements Indian Army will be importing ATGMs which will help in pushing back the enemy’s armoured divisions.

What is DRDO is working on?

Some of the ATGM projects which DRDO is working on include NAG, HELINA, SANT (Stand-off Anti Tank) Missile, Cannon-launched Laser Guided Missile (CLGM), SAMHO, AMOGHA-1, AMOGHA-2, and AMOGHA-3.

<https://www.financialexpress.com/defence/lethal-israeli-anti-tank-guided-missile-spike-inducted-by-indian-army-along-loc/1776711/>

42 defence equipment FDI proposals approved

FC BUREAU
CHENNAI, NOV. 27

The government has approved 42 FDI proposals or joint ventures to manufacture various defence equipments. The current order book of defence PSUs stand at Rs 2.3 lakh crore, the government said.

The 42 FDI proposals have been made both in public and private sector and this includes three joint ventures with Russia- Multirole Transport Aircraft, Indo-Russian Helicopters and Indo Russian Rifles, the government said in a release.

The recent Inter-Governmental Agreement (IGA) on joint manufacturing of spares, components, aggregates and other material related to Russian or Soviet origin Arms and Defence Equipment stipulates assurance of orders for minimum five years to manufacturing facilities. It is subject to reduction in cost, reduction in time frame of supplies and ensuring progressive indigenisation of products in India.

The government also said that the Defence PSUs currently have order books aggregating to Rs 2.3 lakh crore. This includes Rs 59,832 crore order book of Hindustan Aeronautics, Rs 56,300 crore of Bharat Electronics and BEML's Rs 9568 crore.

The orders are primarily meant for the Armed Forces and for export opportunities in the international market. The government has taken steps to improve the order book by including modernization of production capacity and infrastructure, emphasis on import substitution and indigenisation, promotion of exports, introduction of new technologies, product diversification, setting up of JVs with foreign companies.

Further, the public and private industries had announced an investment of Rs 3700 crore for UP Defence Industrial Corridor in August last year and Rs 3100 crore investment was announced for the Tamil Nadu Defence Industrial Corridor in January this year.

With 12 confirmed warships, MILAN to be biggest international exercise by India

In terms of scale, the exercise would be in the category of Rim of the Pacific Exercise (RIMPAC)—the largest naval wargame in the world that is organised at Pearl Harbour by the US Indo-Pacific Command. In its last edition in 2018, 28 nations part...

By Manu Pubby

New Delhi: With over a dozen confirmed foreign warships and close to 20 other nations sending delegations, the MILAN exercise early next year will be India's largest international war game, with top officials saying it will showcase the ability to carry out a world-class naval engagement. While 41 nations have been invited by India for the exercise that is to take place in March at Visakhapatnam, sources told ET that confirmations have been received by a majority and the focus of the war game will be to hone interoperability—a key shift from the past when the MILAN series was seen as more of a cultural and academic exchange.

The invitee list, which includes most major navies of the world but excludes China, Pakistan and Turkey, is also an indication of India's strategic interests in the region, with several nations from Africa making it to the list. "We are not trying to make any statement," a senior official told ET. "There are different ways to look at it but this will be a field practitioners meeting. There will be a professional exchange and a key difference from other events like the International Fleet Review (IFR) will be that this is an operational exercise."

In terms of scale, the exercise would be in the category of Rim of the Pacific Exercise (RIMPAC)—the largest naval wargame in the world that is organised at Pearl Harbour by the US Indo-Pacific Command. In its last edition in 2018, 28 nations participated in RIMPAC, including India, which had deployed a stealth frigate. While MILAN will not have the number of warships at RIMPAC—this number has gone up to 55—in terms of participating nations, it just might beat the world's largest naval wargame. "We now have the capability to conduct an exercise of this scale. It will be similar to RIMPAC where we will also be sending a ship next year," the official said. Initiated in 1995 with four littoral nations coming together, the MILAN series has grown in strength over the past years, with the 2014 edition being the largest with the participation of 17 nations and 15 warships.

<https://economictimes.indiatimes.com/news/defence/with-12-confirmed-warships-milan-to-be-biggest-international-exercise-by-india/articleshow/72266681.cms?from=mdr>

इसरो ने Cartosat-3 लॉन्च कर रचा एक और इतिहास, सैन्य जासूसी के लिए बेहद अहम

इसरो ने बताया कि कार्टोसैट-3 के साथ 13 छोटे अमेरिकी सैटेलाइट को लॉन्च किया गया।

इस सैटेलाइट के माध्यम से पृथ्वी की छोटी से छोटी गतिविधियों पर नजर रखी जा सकेगी।

चेन्नई: उन्नत श्रेणी के बहुउद्देश्यीय सैटेलाइट कार्टोसैट-3 के साथ भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) 13 छोटे अमेरिकी सैटेलाइट को लॉन्च किया। इस सैटेलाइट के माध्यम से पृथ्वी की छोटी से छोटी गतिविधियों पर नजर रखी जा सकेगी। लॉन्च के 17 मिनट बाद PSLV-C47 ने कार्टोसैट को उसके ऑर्बिट में सफलतापूर्वक प्रक्षेपित कर दिया गया है। भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) ने बुधवार को सुबह 9:28 मिनट पर कार्टोसैट-3 को लॉन्च किया।

इस खास मौके पर इसरो चीफ के. सिवन श्रीहरिकोटा मिशन कंट्रोल कॉम्प्लेक्स में मौजूद रहे। उनके साथ मिशन के इंजीनियर्स और इसरो के बड़े वैज्ञानिक मौजूद थे। कार्टोसैट-3 को भारत की आंख भी कहा जा रहा है, क्योंकि इससे बड़े स्तर पर अंतरिक्ष से पृथ्वी पर मैपिंग की जा सकेगी।

इसरो के प्रमुख के सिवन ने कार्टोसैट-3 के सफल प्रक्षेपण पर खुशी जताई है। उन्होंने कहा है कि मुझे खुशी है कि पीएसएलवी-सी 47 ने 13 अन्य उपग्रहों के साथ सफलतापूर्वक कक्षा में स्थापित किया। उन्होंने आगे बताया कि कार्टोसैट-3 उच्चतम रिज़ॉल्यूशन वाला नागरिक उपग्रह है। साथ ही, कहा कि हमारे पास मार्च तक 13 अंतरिक्ष मिशन हैं, जिनमें 6 बड़े वाहन मिशन और 7 सैटेलाइट मिशन शामिल हैं।

ISRO (@isro) [November 27, 2019](#)

इसरो ने बताया कि श्रीहरिकोटा के सतीश धवन स्पेस सेंटर के दूसरे लॉन्च पैड से आज सुबह 9.28 बजे कार्टोसैट-3 का प्रक्षेपण हुआ। इस श्रृंखला का यह नौवां सैटेलाइट है। एजेंसी ने बताया कि पीएसएलवी-सी 47 मिशन के लॉन्च के लिए 26 घंटे का काउंट डाउन मंगलवार सुबह 7.28 बजे शुरू हुआ था।

पीएसएलवी-सी47 रॉकेट अपने साथ कार्टोसैट-3 और अमेरिका के 13 छोटे व्यावसायिक सैटेलाइट को लेकर उड़ान भरा है। कार्टोसैट-3 का कैमरा इतना ताकतवर है कि वह अंतरिक्ष से जमीन पर एक फीट से भी कम की ऊंचाई तक की स्पष्ट तस्वीरें ले सकता है।

— ISRO (@isro) [November 27, 2019](#)

कार्टोसैट-3 का कुल वजन लगभग 1,625 किलोग्राम है। यह सैटेलाइट शहर में नियोजन, ग्रामीण क्षेत्रों में ढांचागत विकास और संसाधनों की मैपिंग, तटवर्ती क्षेत्रों में भू उपयोग इत्यादि कामों में बहुत मददगार होगा।

इसरो व्यावसायिक समझौते के तहत इस सैटेलाइट के साथ 13 अमेरिकी व्यावसायिक नैनो सैटेलाइट को भेजा है। इन अमेरिकी सैटेलाइटों में फ्लॉक-4पी और मेशबेड नामक सैटेलाइट भी शामिल है। फ्लॉक-पी4 पृथ्वी पर नजर रखेगा, जबकि, मेशबेड संचार परीक्षण करेगा।

कार्टोसैट-3 पांच साल तक काम करेगा। जुलाई में मून मिशन चंद्रयान-2 के प्रक्षेपण के बाद इसरो यह पहला सैटेलाइट लॉन्च किया गया।

पीएम मोदी ने इसरो की इस कामयाबी पर दी बधाई

प्रधानमंत्री नरेंद्र मोदी ने इसरो की इस कामयाबी पर उन्हें बधाई दी है। पीएम मोदी ने ट्वीट करके कहा है कि मैं पूरे दिल से इसरो को बधाई देता हूँ। पीएसएलवी-सी 47 के स्वदेशी कार्टोसैट -3 उपग्रह और अमेरिका के एक दर्जन से अधिक नैनो उपग्रहों का सफल प्रक्षेपण किया गया। उन्होंने एक और ट्वीट करके कहा कि उन्नत कार्टोसैट -3 हमारी उच्च संकल्प इमेजिंग क्षमता को बढ़ाएगा। इसरो ने एक बार फिर देश को गौरवान्वित किया है।

वहीं लोकसभा अध्यक्ष ओम बिरला ने भी कार्टोसैट के सफल लॉन्चिंग पर इसरो को बधाई दी। उन्होंने कहा कि मैं पीएसएलवी-सी 47 के स्वदेशी कार्टोसैट -3 उपग्रह और अमेरिका के एक दर्जन से अधिक नैनो उपग्रहों को ले जाने के लिए इसरो को बधाई देता हूँ। उन्नत तकनीकी का कार्टोसैट -3 हमारी हाई रिज्यूलेशन इमेजिंग क्षमता को बढ़ाएगा।

कार्टोसैट-3 के लॉन्च से पहले तिरुपति गए थे इसरो प्रमुख

देश के इमेजिंग सैटेलाइट कार्टोसैट-3 के लॉन्च से पहले इसरो प्रमुख के. सिवन तिरुमला की पहाड़ियों पर स्थित भगवान वेंकटेश्वर के दरबार में पहुंचे। शिवन ने भगवान वेंकटेश्वर की पूजा अर्चना की।

बाद में संवाददाताओं से बातचीत में सिवन ने कहा कि चंद्रयान-2 का ऑर्बिटर ठीक तरह से काम कर रहा है और चंद्रमा के बारे में अहम सूचनाएं भेज रहा है। बता दें कि चंद्रयान-2 को सात जुलाई को लॉन्च किया गया था। उसमें लैंडर विक्रम और रोवर प्रज्ञान भी थे। लैंडर को चंद्रमा की सतह पर सॉफ्ट लैंडिंग करनी थी, लेकिन आखिरी वक्त में उसका भू कक्षा से संपर्क टूट गया और उसकी हार्ड लैंडिंग हुई थी और दोनों ने काम करना बंद कर दिया।

<https://www.jagran.com/news/national-isro-to-launch-cartosat-3-and-13-other-us-satellites-from-sriharikota-19793330.html>

ISRO milestone: 300 satellites from 33 nations put in space in 20 years

By U Tejonmayam

HIGHLIGHTS

- *ISRO, on Wednesday, successfully launched PSLV-C47 that placed Earth observation satellite Cartosat-3 and 13 US nanosatellites*
- *It marked Isro's milestone of launching more than 300 satellites from 33 countries in two decades*
- *The 1,625kg Cartosat-3 is the first in the third-generation Earth observation satellite with a high-resolution imaging capability*

Sriharikota: Two months after lunar lander Vikram's failure to softland on Moon, cheer was back at Indian Space Research Organisation (ISRO) on Wednesday morning when it successfully launched PSLV-C47 that placed Earth observation satellite Cartosat-3 and 13 US nanosatellites. It marked ISRO'S milestone of launching more than 300 satellites from 33 countries in two decades.

"I heartily congratulate the entire @isro team on yet another successful launch of PSLV-C47 carrying indigenous Cartosat-3 satellite and over a dozen nano satellites of USA. The advanced Cartosat-3 will augment our high resolution imaging capability. ISRO has once again made the nation proud!, " tweeted Prime Minister Narendra Modi.

On Wednesday, around 17 minutes after the rocket lifted off from the second launch pad at Satish Dhawan Space Centre, Sriharikota, the launcher injected Cartosat-3 into a 509km polar sun-synchronous orbit. In the next 10 minutes, 13 nanosatellites from the US were placed in their respective orbits.

The 1,625kg Cartosat-3 is the first in the third-generation Earth observation satellite with a high-resolution imaging capability and the ninth in the Cartosat series. Isro chairman K Sivan said, "Cartosat-3 is the most complex and advanced earth observation satellite developed by ISRO so far."

The camera on board the satellite is expected to capture images with a spatial resolution of less than 30cm (which means from space it can see objects as small as 30cm). Cartosat-1 had 2.5m resolution and the Cartosat-2 series had 1m resolution. ISRO said Cartosat-3 would help large-scale urban planning, rural resource management and infrastructure development, besides providing information for coastal land use and land cover.

For ISRO, this is the 47th successful PSLV flight since its first success on October 15, 1994, when the vehicle, in its second development flight placed 804kg remote sensing satellite IRS-P2 in orbit. So far, PSLV has placed 48 satellites including Chandrayaan, Mars Orbiter Mission and micro, nano and experimental satellites.

It was the fifth launch of the year that comes after GSLV-MkIII successfully launched Chandrayaan-2 in July 22. In September, Vikram lander crashed when it attempted to softland on Moon. ISRO has so far placed 310 satellites from 33 countries since May 26, 1999 when PSLV, on its second operational flight, carried three satellites in a single vehicle for the first time which included those from Korea and Germany. Sivan said the agency has planned 13 missions in the next four months which includes six launch vehicle missions and seven satellite missions. "Our hands are full. Team Isro will rise to the occasion and meet every demand," he said.

<https://timesofindia.indiatimes.com/india/isro-milestone-300-satellites-from-33-nations-put-in-space-in-20-years/articleshow/72268186.cms>

Touching new heights

2019 has been a very successful year for Indian space missions. But there's a steady long way to go

Despite the public failure of India's mission to land a probe on the lunar surface, 2019 has seen the country take massive strides in space exploration. Those who remember how Indian rockets used to blow up at every second launch not that long ago, are all amazed at how we have come. We have sent missions to the moon and Mars. Plans are afoot to have a manned spaceflight within the next five years. But the latest milestone by the Indian Space Research Organisation (ISRO) is telling. The 49th flight of India's PSLV rocket not only launched a new image-mapping satellite into the orbit but also carried 13 nano-satellites, barely much larger than a hardcover book. These are being used by smaller nations as well as research institutes across the world, who are exploring the final frontier as well.

With the 13 satellites launched by PSLV C-47 — all from the US — India has now carried over 300 such for foreign nations. Even though we cannot compete with the commercial launch abilities of the US, Russia and the European Space Agency, we have carved out a niche for ourselves with our precision and cost-competitiveness. One that has resulted in a Rs 6,289 crore revenue for ISRO in the last three years. Besides CARTOSAT will address the needs of large-scale urban planning, rural resource and infrastructure development, coastal land use and cover. This data is of value to any policy-maker. We must, however, remain wary of



the tremendous developments being worked on by private space entrepreneurs in the US, particularly Elon Musk and Jeff Bezos, both of whom are driving organisations, making some critical breakthroughs in reusable space hardware. They will likely power the US' future space endeavours as the general public across the world has begun to wonder why man abandoned the deep space exploration on the 50th anniversary of Neil Armstrong's first steps on the moon.

If there is an area where the Indian space missions could do better, it is to intensify collaboration with other space agencies. No Indian citizen has been into space since Wing Commander Rakesh Sharma in 1984. Although astronauts like Kalpana Chawla and Sunita Williams made it, they became American citizens. It is unfortunate that no Indian, or for that matter Chinese, has been to the International Space Station. Of course, as a cartoon in a global newspaper highlighted, there is still a horribly racist tinge to the way many foreign Governments look at India's space ambitions. We have to be open to new ideas as well as technology. While there are some inherent risks, it would be silly to spend thousands of crores in duplicating technologies that have already been perfected in other nations. And while it might seem like a controversial idea to some, India could also look at collaborating with China, which is seemingly locked out of the Western space race, and jointly develop some projects. While ISRO is a matter of pride and our prudence with costs is a good thing, the fact is that given the economic times we are living in, we have to tighten our purse strings and make every rupee count for more. Collaboration with other nations as well as private organisations might not be a bad thing.

<https://www.dailypioneer.com/2019/columnists/touching-new-heights.html>

ISRO's launch tally hits 5 main satellites this year

India ranks fifth along with newbie New Zealand and each have 6% of the orbital launch pie

MADHUMATHI D.S.
BENGALURU

The Indian Space Research Organisation (ISRO) on Wednesday touched a tally of launching five main satellites so far in 2019 after sending up earth imaging satellite Cartosat-3.

Globally as launches go, China is set to top the chart of space-faring nations for the second year in a row, notes a recent report in the technology site Ars Technica.

India ranks fifth along with newbie New Zealand. They each have 6% of the orbital launch pie, according to website Space.Skyrocket.

It said the space majors totally made 87 orbital launches as on November 27. China

launched 28 satellites or 32% of them.

When the year ends, China's share will likely be still above Russia (20) and the U.S. (18), and the two old champions are unlikely to reach or overtake it in the remaining month, reckons Ars Technica.

By the end of 2019, India's launches may climb two numbers: that is if the radar imaging satellites RISAT-2BR1 and 2BR2 keep their December due dates.

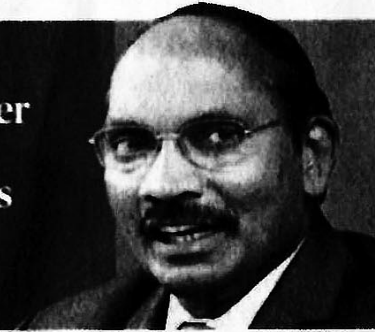
The space agency counts a satellite and a launch vehicle as two missions.

Seven launches

By that yardstick, ISRO in 2018 made seven launches out of 16 missions and did

 We have 13 more missions to go over the next four months. They include 6 launches and 7 satellites

K. SIVAN,
ISRO CHAIRMAN



them more frequently than this year.

Soon after Wednesday's launch, ISRO Chairman K. Sivan announced, "We have 13 more missions to go over the next four months. They include 6 launches and 7 satellites."

He was referring to the target for the financial year ending in March 2020.

However, will the current fiscal year see fewer missions than the goal of 32 missions (with 14 launches) as Dr. Sivan stated in January?

The year has seen 11 missions - 5 launches and 6 satel-

lites (including GSat-31 satellite flown on a foreign launcher).

Eight of them came since April. Adding the upcoming 13, the current fiscal, as we now understand, may end with a total of 21 missions - 11 short of the January goal of 32. Can the space agency make up for it and do over 60% of them in four months?

'Not just numbers'

"You are evaluating ISRO as a production house and I don't agree on that," an ISRO spokesman said. "In the year that you are working on

(scientific missions like) a human space flight, 60% of the resources are attracted there. This year's Chandrayaan-2 alone equalled [the efforts of] five or six missions, given its complex elements such as an orbiter, a lander, a rover and a launch vehicle. Which is why such numbers are misleading."

He conceded that ISRO was "slightly behind its plan" for the financial year and would make up the shortfall in the next four-odd months. Delays in space missions, he said, are routine because each project must be 100% perfect.

"Adding numbers is a wrong way to gauge the output of a research organisation. For example, I can always repeat a routine remote sensing mission every month, but that is not the real objective of ISRO."

‘Information security stepped up at KKNPP after cyber attack’

MoS says a complete check of the administrative network was carried out

Tirunelveli: A comprehensive safety audit was conducted on the administrative network of the Kudankulam Nuclear Power Plant (KKNPP) following a recent cyber attack, and appropriate safety measures have been put in place to thwart similar attacks in the future, Jitendra Singh, Minister of State for Personnel, Public Grievances, Pensions and Prime Minister’s Office, has said.

Responding to a question from Congress MP from Palakkad V.K. Sreekandan on the recent cyber attack on the KKNPP network and the safety measures put in place in the wake of the incident that rattled project proponent Nuclear Power Corporation of India Limited (NPCIL), Dr. Singh said a complete check of the administrative network of the Kudankulam Nuclear Power Plant was done by the Indian Computer Emergency Response Team (CERT-In), along with the Computer and Information Security Advisory Group (CISAG) of the Department of Atomic Energy (DAE).



“Certain measures for immediate and short-term implementation have been recommended. Several measures have been taken for further strengthening of Information Security in administrative networks like hardening of internet and administrative intranet connectivity, restriction on removable media, blocking of websites and IPs which have been identified with malicious activity, etc.,” he said.

Immediately after the cyber attack was brought to light by a cyber security expert, the KKNPP administration had declared that their “isolated network with firewalls” cannot be accessed through the internet from any part of the world, and hence, there was no need for panic.

Moreover, the strict ban on bringing communication gadgets, including mobile phones, WiFi devices and USBs, inside the KKNPP premises had further strengthened security, a statement from the KKNPP had claimed.

However, much to the embarrassment of the KKNPP administration, the NPCIL admitted within the next 24 hours that a “failed cyber attack” on its network did take place, prompting Opposition leaders and anti-nuclear groups to raise concerns about the safety of the reactors.

<https://www.thehindu.com/news/national/tamil-nadu/information-security-stepped-up-at-kknpp-after-cyber-attack/article30100775.ece>