

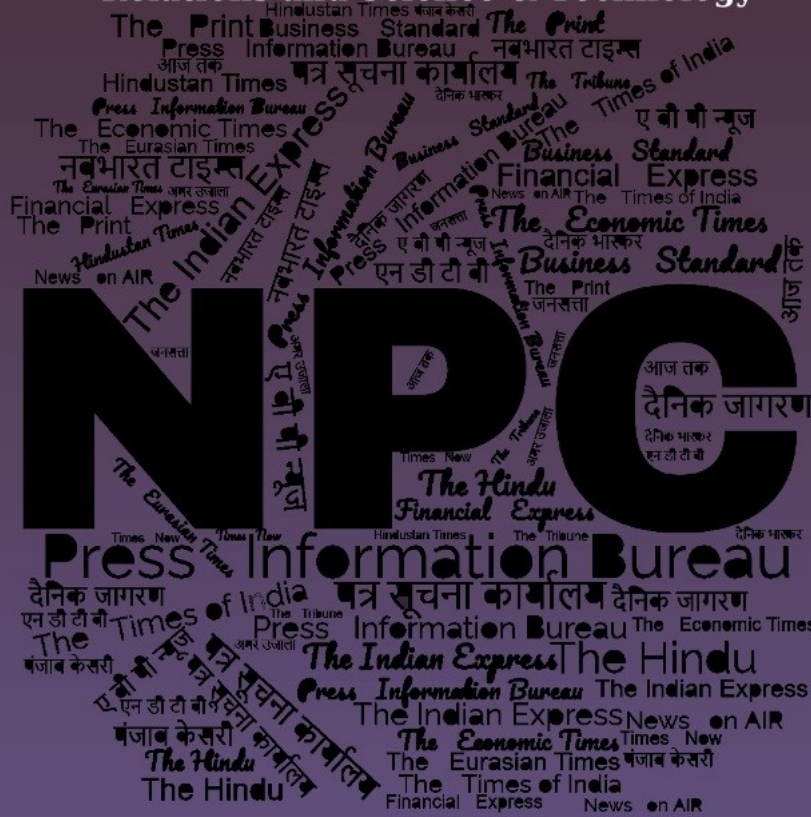
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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## Defence News

# Defence Strategic: National/International



**Press Information Bureau**  
**Government of India**

**Ministry of Defence**

*Mon, 15 July 2024*

## **Raksha Rajya Mantri visits Hindustan Aeronautics Limited & BEML Limited facilities in Bengaluru**

Stay abreast with latest technological advancements to develop niche products & platforms: Shri Sanjay Seth to officials

“Enhance cooperation with private sector to make India a global defence manufacturing hub”

Raksha Rajya Mantri Shri Sanjay Seth visited the facilities of Hindustan Aeronautics Limited (HAL) and BEML Limited in Bengaluru, Karnataka on July 15, 2024 to review the works being carried out by the two Defence Public Sector Undertakings (DPSUs). During the two visits, he interacted with the officials of HAL & BEML Limited and lauded their efforts towards realising Prime Minister Shri Narendra Modi’s vision of Aatmanirbhar and Viksit Bharat.

The Raksha Rajya Mantri exhorted the officials of the DPSUs to evolve with changing times, emphasising on the need to stay abreast with latest technological advancements to develop niche products & platforms. He urged them to enhance cooperation with the private sector to achieve the Government’s overall objective of making India a global defence manufacturing hub. He extended the Government’s all possible support in this mission.

Shri Sanjay Seth began his engagements with the visit to HAL, where he was briefed on the products, repair and overhaul, aircraft upgrade, avionics developments, exports, engine production, manned & unmanned aerial vehicles, indigenisation measures and support to ISRO. He also visited the Light Combat Aircraft Tejas & Helicopter Divisions.

Chairman and Managing Director (Additional Charge) Shri CB Ananthakrishnan thanked the Raksha Rajya Mantri for the support given by the Government and said that HAL has taken proactive measures to overcome challenges in different areas of its operations.

During his visit to BEML Limited, Shri Sanjay Seth flagged-off a new driverless MRS-1 Metro trainset, marking another milestone in the achievements of the DPSU. This trainset is the 55th to be supplied to the Mumbai Metro Rail Metropolitan Authority. BEML is the first Indian rolling stock manufacturer to design, develop, manufacture, and supply driverless trains.

The Raksha Rajya Mantri commended the BEML's contribution to the 'Make in India' initiative. The driverless metro trainset symbolises the nation's growing capabilities in manufacturing advanced transportation solutions, he said. Chairman and Managing Director, BEML Shri Shantanu Roy expressed his appreciation for the Ministry of Defence's continued support and reiterated the DPSU's commitment to deliver quality products.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2033420>

# THE ECONOMIC TIMES

*Mon, 15 July 2024*

## **India, US carry out mega wargame in Indian Ocean**

Indian Navy's frontline warships carried out a mega military exercise with the Theodore Roosevelt carrier strike group of the US in the Indian Ocean, demonstrating the growing strategic congruence between the two sides in the key maritime domain. The USS Theodore Roosevelt is a Nimitzclass, nuclear-powered, aircraft carrier of the US Navy.

A carrier battle group or carrier strike group is a mega naval fleet comprising an aircraft carrier, accompanied by a large number of destroyers, frigates and other ships. The Theodore Roosevelt carrier strike group operated alongside forces from the Indian Navy in the Indian Ocean on July 12, the US embassy said in a readout.

The wargame came amid increasing concerns among democratic countries over China's increasing military muscle-flexing in the larger Indo-Pacific region. The Indian Navy's deployment included guided missile destroyer INS Visakhapatnam and replenishment ship INS Aditya.

"This joint maritime activity advanced interoperability between the two major defence partners and underscores their shared commitment to upholding a free and open Indo-Pacific," the embassy said.

The US and Indian military forces focused on improving shared maritime domain awareness and information sharing, enhancing replenishment and logistics interoperability and improving combined air-to-air capabilities, it said.

"Participating units include the Nimitz-class aircraft carrier USS Theodore Roosevelt, Carrier Air Wing 11, and the Arleigh Burke-class guided-missile destroyer USS Daniel Inouye," it said. The USS Theodore Roosevelt is currently operating with carrier strike group nine after conducting this joint maritime activity in the 7th Fleet area of operations.

The 7th Fleet is the US Navy's largest forward-deployed numbered fleet, and routinely interacts and operates with allies and partners in preserving a free and open Indo-Pacific region. The Indian

Navy routinely participates alongside US Navy units in multilateral exercises across the Pacific, including Southwest Asia and littoral Africa.

"In addition to the group sail, the Indian Navy is also operating in leadership roles with the US Navy and other allies and partners in the ongoing Rim of the Pacific (RIMPAC) 2024 exercise in Hawaii," the US readout said.

<https://economictimes.indiatimes.com/news/defence/india-us-carry-out-mega-wargame-in-indian-ocean/articleshow/111750555.cms?from=mdr>

# THE ECONOMIC TIMES

*Mon, 15 July 2024*

## **Zen Technologies launches AI-powered robot for global defense market**

Zen Technologies, an anti-drone technology and defence training solutions provider, in collaboration with its subsidiary AI Turing Technologies on Monday introduced AI-powered robot Prahasta, among other products, for the global defense market.

Prahasta is an automated quadruped that uses LiDAR (light detection and ranging) and reinforcement learning to understand and create real-time 3D terrain mapping for unparalleled mission planning, navigation, and threat assessment.

The company also launched anti-drone system camera Hawkeye, remotecontrolled weapon station Barbarik-URCWS, and Sthir Stab 640, a rugged stabilized sight designed mainly for armoured vehicles, ICVs, and boats.

"These innovations represent a significant advancement in autonomous defence operations. We believe the launch of these products will raise awareness around the need to integrate advanced robotics into combat and reconnaissance missions.

"Our self-funded products will further enable Zen to offer an expanded range of cutting-edge technologies to both current and prospective clients," Zen Technologies' Chairman and Managing Director Ashok Atluri said.

The Hyderabad -based firm claims Barbarik-URCWS to be the world's lightest remote-controlled weapon station, offering precise targeting capabilities (5.56 mm to 7.62 mm calibers) for ground vehicles and naval vessels, maximizing battlefield effectiveness while minimizing personnel risk.

Shares of Zen Technologies settled at Rs 1,362.00 apiece on BSE on Monday, up 5 per cent from the previous close.

<https://economictimes.indiatimes.com/news/defence/zen-technologies-launches-ai-powered-robot-for-global-defense-market/articleshow/111758599.cms>

## **Stealth frigates from Russia to be delivered in September 2024, February 2025**

After a series of delays, two stealth frigates under construction in Russia for the Indian Navy are set to be delivered soon beginning September. Construction and deliveries were delayed due to COVID, war in Ukraine and western sanctions.

“First ship Tushil is ready for acceptance by the Indian Navy and is scheduled to be delivered by September. The commissioning crew reached Russia earlier this month,” a defence official in the know said. “The second ship Tamal is expected to be delivered by February 2025.” In October 2016, India and Russia signed an Inter-Governmental Agreement for the four stealth frigates, two directly imported and two to be manufactured by Goa Shipyard Limited (GSL).

A \$1-billion deal was subsequently signed for the two frigates under direct purchase. In November 2018, the GSL signed a \$500 mn deal with Rosoboronexport of Russia for material, design and specialist assistance to locally manufacture the two frigates, and in January 2019, the contract was signed between the Indian Defence Ministry and GSL. All the four ships are powered by engines from ZoryaMashproekt of Ukraine.

As per schedule, GSL is scheduled to deliver the first ship in 2026 and the second one six months later. Defence officials expressed confidence that they would be delivered on schedule. “Construction at GSL is progressing and launch (into water) of the first ship would take place in the next couple of months,” another defence source said. The basic structures of two frigates were lying at Yantar shipyard in Russia which were punched by India.

They are now being finished. The Indian Navy already operates six of these frigates weighing around 4,000 tonnes each. As reported by The Hindu in 2022, these were initially a delay in construction due to COVID, further delayed due to the war in Ukraine and sanctions on Russia.

<https://www.thehindu.com/news/national/stealth-frigates-from-russia-to-be-delivered-in-september-2024-february-2025/article68407630.ece>

## **China's covert 6th fighter jet program: What we know about their sixth-gen developments**

China's development of a sixth-generation fighter jet is progressing rapidly. While details remain shrouded in secrecy, evidence indicates significant advancements, suggesting a readiness goal by 2035. This development comes as the US Air Force questions the expense of its own Next

Generation Air Dominance fighter program, contrasting sharply with China's apparent determination.

### **Characteristics of Sixth-Generation Fighters**

Sixth-generation fighters are still in development worldwide, featuring potential capabilities such as stealth, variable-cycle engines, advanced human-systems integration, optional manning, and cutting-edge digital capabilities including AI and cyber warfare.

### **Official Confirmation and Timelines**

In January 2019, Wang Haifeng, chief designer at Chengdu Aerospace Corporation, acknowledged China's pre-research into sixth-generation fighters. He highlighted elements like AI, greater stealth, and omnidirectional sensors, with a target to field a fighter by 2035. Rick Joe, a commentator on the PLA, suggests a prototype flight by 2028 is possible, maintaining the 2035 timeline.

### **Expert Insights and Predictions**

China's military ambitions continue to advance with the development of a sixth-generation fighter jet, drawing significant attention from global defense analysts. Rick Joe, a commentator on the People's Liberation Army (PLA) who has contributed to *The Diplomat*, estimates that if China is to meet its 2035 timeline for deployment, a prototype must be ready by 2028.

Joe believes this is feasible, considering Beijing's structured program of record. Dr. Brendan Mulvaney, Director of the China Aerospace Studies Institute (CASI) at the US Air Force Department, agrees with this outlook but offers a more extended timeline. "We have a couple of little snippets and quotes talking about China's sixth-generation program," he said, predicting it would probably take "until the late 2030s, if not the early 2040s," to see a substantial design.

Dr. Mulvaney told ANI, "They've done a remarkable job of closing the gap at this point, so give them another 15 years." However, he noted the challenges in predicting the program's pace. "I'd say it would take at least a decade to put all that through and get everything in place," he said, emphasizing the need for advances in supercruise capabilities, engine development, and stealth technology. He acknowledged the potential for breakthroughs in areas like quantum computing to accelerate progress.

"They make big bets. When those big bets pay off, they pay off in spades." General Mark Kelly, head of the US Air Force Air Combat Command, confirmed the existence of China's program, stating, "I can also tell you they're on track." He added, "They see it greatly the way we see it in terms of an exponential reduction in signature and exponential acceleration in processing power and sensing." Indicators of China's progress have been increasing since 2019.

Joe points to AVIC artwork depicting next-generation fighter configurations, statements from military or industry personnel, and various academic papers. Notably, satellite imagery captured a tailless fighter-like airframe at CAC facilities in October 2021. Joe believes demonstrator testbeds, possibly subscale, have already flown, with the new fighter likely resembling a tailless, flying-wing arrowhead design.

He refers to it as the J-XD, though its official name remains unknown. Dr. Mulvaney highlighted China's historical challenge in jet engine development, though he noted improvements. "At the end of the day, that's just science. If you put enough time and effort and you mobilize that system...you

can make a good aerospace engine," he said. China might continue to buy Russian systems and engines for refinement, but the WS engine series is expected to become just as capable.

China's future fighter may be optionally manned, reflecting advances in AI and associated technologies. Dr. Mulvaney suggested, "You don't have to have a man, and you potentially let it go off on its own, or it could serve as a loyal wingman."

The development of unmanned combat aerial vehicles (UCAV) and collaborative combat aircraft (CCA) is also prominent in China's strategy. Joe believes the PLA is testing a small number of advanced GJ-11 UCAVs and assumes other sophisticated UCAVs are in development. He contends that many drones displayed at airshows do not represent the actual advanced models intended for the PLA. China's J-20 fighter jet program offers insights into its capabilities.

Dr. Mulvaney assessed the J-20 as "a fairly capable, pretty modern fighter," though not as advanced as the F-22 or F-35. He explained that the J-20's mission is to keep hostile fighters away from China's borders, primarily using longer-range missiles. Joe stated, "For the J-20 as a program, its scale, production run, and rate has somewhat exceeded my own expectations," estimating production has reached 300 aircraft. The new J-20A, powered by the WS15 engine, will enhance its capabilities.

China may use the J-20 to trial manned-unmanned teaming (MUM-T) as it develops the J-XD fighter jet. The twin-seat J-20B could serve as a technology demonstrator, with one seat for a pilot and another for a battle manager.

Dr. Mulvaney concluded that China's air component is expected to become more integrated with its space and cyber forces over the next 15 years. "We should expect the Chinese to, over the next 15 years, have their air component become more joint or integrated, and probably also be more tied to both their space force and cyber force," he said, reflecting modern warfare trends.

### **US Recognition and Strategic Implications**

General Mark Kelly of the US Air Force Air Combat Command confirmed China's trajectory, noting their alignment with US expectations regarding technological advancements. China's efforts are evidenced by AVIC artwork, statements from military officials, academic papers, and satellite imagery of potential testbeds.

### **Technological Capacity and Challenges**

While some doubt China's ability to produce a credible sixth-generation fighter, experts like Dr. Mulvaney and Rick Joe believe China possesses the necessary know-how. Despite ongoing challenges, particularly with jet engines, China is closing the technological gap with continuous advancements.

### **Strategic Deployment and Future Prospects**

China's development includes potential unmanned and optionally manned configurations, reflecting its ambition to integrate AI and drone capabilities. The PLA's focus on collaborative combat aircraft underscores this trend. China's current J-20 fighter could serve as a platform for testing manned-unmanned teaming, paving the way for future innovations.

### **What is sixth-generation fighter technology?**



Sixth-generation fighter technologies are at the forefront of aviation innovation, incorporating fifth and sixth-generation communications, the Internet of Things (IoT), and a system-of-system approach for extensive data sharing.

These advancements, however, come with high costs, prompting countries to form consortiums to share the financial burden. An example of such collaboration is the Global Combat Air Program (GCAP) involving companies from Italy, Japan, and the UK. Experts are urging India, which is still developing its fifth-generation Advanced Medium Combat Aircraft (AMCA), to consider joining the GCAP.

### **Defining Fifth-Generation Fighters**

The fifth-generation fighter era began with the Lockheed Martin/Boeing F-22 Raptor in 2005. These jets are designed for network-centric combat, featuring low multi-spectral signatures, advanced materials, and shaping techniques. They employ multifunction AESA radars,IRST for situational awareness, and sophisticated avionics for enhanced performance. Examples include the F-22, F-35 Lightning II, Russia's SU-57, China's Chengdu J-20 and Shenyang J-31, and India's developing AMCA.

### **Innovations in Sixth-Generation Fighters**

Sixth-generation fighters emphasize digital capabilities, AI, data fusion, cyber warfare, and modular designs for ease of upgrades. These technologies include advanced stealth airframes, AESA radars with GaN transistors, increased battlefield survivability, and the ability to undertake manned and unmanned missions. They also feature high-capacity networking, battlefield command capabilities, and DEW such as laser CIWS.

### **Key Sixth-Generation Programs**

#### **The Tempest Program**

Launched in 2018, the UK's Tempest program, led by BAE Systems, explores new technologies like DEW, augmented reality cockpits, and AI-supported Intelligent Virtual Assistant (IVA). The program has expanded to include Sweden and Italy, focusing on future combat air systems.

#### **Japan's Mitsubishi F-X**

After the US restricted F-22 exports, Japan initiated its own fighter program, resulting in the Mitsubishi F-X. This program emphasizes air superiority, nextgeneration technologies, and affordability, with potential collaboration with the UK's Tempest program under the JAGUAR initiative.

#### **Global Combat Air Program (GCAP)**

Announced in December 2022, GCAP is a multinational initiative by the UK, Japan, and Italy to develop a sixth-generation stealth fighter. It combines the UK and Italy's Tempest and Japan's F-X programs, with an equal partnership among member nations. The program aims to replace the Eurofighter Typhoon and Mitsubishi F-2, with service induction expected around 2035.

### **Challenges and Requirements**

GCAP must address several challenges, including integrating advanced AI, data fusion, secure communications, and DEW. It must also ensure compatibility with NATO standards and partner

countries' requirements. The program aims for enhanced maneuverability, speed, range, low observability, and resilience against adversary jamming, while controlling developmental and project costs.

## **Global and National Contexts**

### **US and Chinese Efforts**

The US's Next Generation Air Dominance (NGAD) program and China's sixth-generation efforts highlight the global race for air superiority. NGAD aims to succeed the F-22 Raptor with a family of systems, while China is developing advanced radar, avionics, and engine technologies.

### **India's Path Forward**

India, still developing its AMCA, faces a strategic decision on whether to join international programs like GCAP or the French-led FCAS. Collaborative routes could offer shared costs and risks, but India must carefully navigate its options while advancing its indigenous technologies.

China's accelerated development of sixth-generation fighter jets underscores the dynamic nature of global military technology. As China advances, the international community must remain vigilant and innovative to maintain strategic balance.

<https://economictimes.indiatimes.com/news/defence/chinas-covert-6th-fighter-jet-program-what-we-know-about-their-sixth-gen-developments/articleshow/111756645.cms>

# THE ECONOMIC TIMES

*Mon, 15 July 2024*

## **Russian Army marches on 'Made in Bihar' boots manufactured in Hajipur**

As the Russian Army continues its operation in Ukraine, the soldiers march on using 'Made in Bihar' boots manufactured in Hajipur. Bihar's Hajipur city, known for its agricultural production, is writing its own story by manufacturing safety shoes for the Russian army, which has an acclaimed international presence. Hajipur-based Competence Exports, a private limited company, makes safety shoes for companies based in Russia and designer shoes catering to European markets.

Speaking about the facility, General Manager Shib Kumar Roy told ANI, "We started the Hajipur facility in 2018, and the main interest is to generate local employment. At Hajipur, we make safety shoes that are meant to be exported to Russia. Total exports are for Russia, and we are also slowly working on Europe and will launch in the domestic market soon."

Talking about safety shoe requirements for the Russian army, Roy said, "Their requirements are that shoes should be lightweight, slip-resistant, have special features in the sole, and withstand extreme weather conditions like -40 degrees Celsius. We manufacture the safety shoes, considering these conditions."

The response has been tremendous, and his company is one of the largest exporters to Russia. Expectations are that the numbers will expand day by day. Talking about the employment aspect, Roy said, "The ambition of the company's MD, Danesh Prasad, is to make a world-class factory in Bihar and contribute to state employment. We are trying our best to give maximum employment to employees, of which 70 percent are women out of 300 employees."

They exported 1.5 million pairs last year, which is worth Rs 100 crore, and their aim is to increase it by 50 percent next year. General Manager Roy further said that the Bihar government has promoted and supported the industries but still needs improvement in infrastructure like roads and better communication so that buyers from Russia can communicate easily.

"We also want ready-skilled manpower, and for that, a training institute should be set up so that we get skill-ready manpower, otherwise, we have to train the workers before inducting them," he added. The Hajipur facility also exports luxury designer or fashion shoes to European markets, namely Italy, France, Spain, and the UK.

"Our aim is to develop high-end shoes for international brands. We recently started negotiations with a Belgian company as well," said Mazhar Pallumiah, head of fashion development and marketing for the company. Pallumiah did note that initially, foreign companies had some reservations, but when they received the sample, they were assured. We are also expecting some companies to visit the factory next month, he said.

"Starting the fashion industry is a challenge in Bihar and in Hajipur, but with the vision of promoters and government support, we are confident to continue on this line," he pointed out.

<https://economictimes.indiatimes.com/news/defence/russian-army-marches-on-made-in-bihar-boots-manufactured-in-hajipur/articleshow/111756154.cms>

## THE ECONOMIC TIMES

*Mon, 15 July 2024*

### **Defence MoS says HAL has huge role to play in achieving Make-in-India dream in defence**

Bengaluru: Union Minister of State for Defence Sanjay Seth on Monday said that public sector aerospace and defence company Hindustan Aeronautics Limited has a huge role to play in achieving the 'Make in India dream' in Defence, as he called upon the company to contribute towards achieving 'Viksit Bharat'. Seth visited the HAL facilities here and while addressing HAL's top management, he assured the company of government support.

He called upon the Bengaluru-headquartered company to ensure that the various challenges in design and development as well as production and delivery are addressed in time to contribute to achieving Viksit Bharat as envisaged by the government.

In an official statement, the company said, "HAL made the presentation, covering its product profile (the present and the future), current ROH (Repair and Overhaul), aircraft upgrade and

modifications, avionics developments, exports, engine production, manned and unmanned aerial vehicles, indigenisation measures, civil MRO (Maintenance, Repair, and Operations) initiatives and support given to various ISRO platforms."

Later, the minister visited HAL's LCA Tejas and Helicopter divisions. C B Ananthakrishnan, CMD (Additional Charge) thanked the minister for the support given by the government and said that HAL has taken proactive measures to overcome the challenges in different areas of its operations.

<https://economictimes.indiatimes.com/news/defence/defence-mos-says-hal-has-huge-role-to-play-in-achieving-make-in-india-dream-in-defence/articleshow/111754838.cms>

## ThePrint

Mon, 15 July 2024

### **Chinese research vessel heading to Maldives again, 3rd port call likely in island country this year**

Chinese research vessel Xiang Yang Hong 03 entered the Indian Ocean Friday and was on its way to the Maldives, local media reported.

The ship has made at least two port calls in the island country in 2024, amid India's growing concern over China's activity in the Indian Ocean Region in recent years.

The Xiang Yang Hong 03 is expected to reach the borders of Maldivian waters on Monday, according to online newspaper *Adhadhu*. The ship was located near Indonesia on 12 July, according to maritime analytics provider, MarineTraffic.

There is no statement yet from the Maldivian government regarding whether the ship is expected to dock at its ports. The vessel left the Chinese port of Xiamen on 3 July and is scheduled to return on 28 August, according to MarineTraffic.

On 23 January, days after Maldivian President Mohamed Muizzu completed his first official foreign visit to China, Malé announced it was giving the Xiang Yang Hong 03 permission to dock at Maldivian ports. The Ministry of Foreign Affairs in its statement explained that the ship would be making a port call "for rotation of personnel and replenishment".

"The vessel would not be conducting any research while in the Maldivian waters," added the Maldivian Ministry of Foreign Affairs in its statement.

New Delhi has been unhappy with both Sri Lanka and Maldives allowing the Xiang Yang Hong 03 to dock in its ports. Termed as research vessels, the information collected by such ships can be used for both civilian and military purposes.

Colombo in December 2023 put in place a moratorium on allowing such vessels from all countries to dock at its port. Tharaka Balasuriya, Sri Lanka's Minister of State for Foreign Affairs, told ThePrint that the decision was made keeping India's security concerns in mind.

However, since Muizzu's election as president of Maldives, the island country has shown a distinct tilt towards China, even as ties have normalised between New Delhi and Malé in recent months.

The Xiang Yang Hong 03, for example, was allowed to dock twice in the country – in Malé on 22 February and in the Thilafushi harbour on 25 April – before departing. The vessel spent nearly three months in the waters surrounding the Maldivian Exclusive Economic Zone (EEZ).

While Chinese vessels have been around to dock in Maldives, its government last December decided not to renew the hydrography agreement with India.

<https://theprint.in/defence/chinese-research-vessel-heading-to-maldives-again-for-rotation-of-personnel-and-replenishment/2175456/>

## Business Standard

*Mon, 15 July 2024*

### **Delhi-based Velmenni wins grant to develop submarine communication**

A small Delhi-based firm, Velmenni, is among the high-tech defence companies awarded the Innovations for Defence Excellence (iDEX) grant to develop wireless communication between submarines and the control centre. The award is a Ministry of Defence (MoD) financial incentive for cutting-edge defence research and development. The grant was awarded last year, but since the disbursement is milestone-based, it is still being paid out.

The iDEX programme aims to foster innovation in India's defence economy by identifying cutting-edge technologies such as Velmenni's Light Fidelity (Li-Fi) and matching them with requirements raised by other companies, under MoD projects such as Make in India, Start-up India and the Atal Innovation Mission (AIM). To obtain iDEX funding, which must be matched by the winner, a defence firm must provide a solution to a "defence challenge", identified by another company. A list of these "defence challenges" is then promulgated and companies are invited to provide technical solutions.

Velmenni addressed one of the Indian Navy's longstanding problems relating to the transmitting of data between their submarines and the control centre. After a submarine returns from patrol or surveillance, it is required to transfer large volumes of data, amounting to several terabytes, to the submarine command centre.

Radio frequency (RF) data cannot be transmitted securely, since it is vulnerable to interception. To transfer data safely, a physical cable connection must be laid from the submarine to the command centre. Since the submarine would typically be docked at a distance of over 200 metres from the command centre, the submariners have to physically lay down a cable to extract the data.

Velmenni offered to transfer the data wirelessly, in a fully secured manner and proved they could technically do so. Ujjwal Minocha, Velmenni's co-founder and chief operating officer, explains this was done using the technology Li-Fi. This involves using light to transmit data rather than the

insecure RF band. “The iDEX grant is a testament to the potential of our Li-Fi technology,” said Deepak Solanki, chief executive officer, Velmenni,

“With these resources, we are poised to revolutionise wireless communication, ensuring secure and efficient data transmission using light,” Solanki said.

“Li-fi uses both parts of the light spectrum, visible and invisible, to transmit data from one point to another. Since data is made up of zeros and ones, it can be transported through multiple mediums. While RF has been most widely used for this, light communication has also been in existence, such as in optic fibre cables, where data travels through light only,” says Solanki.

Light Fidelity was first heard of in 2011, when it was raised by Professor Harald Haas of the University of Edinburgh, while researching alternate source of wireless communication. “The MoD grant strongly validates Li-Fi's potential to address the Navy's communication challenges in harsh defence environments,” said Minocha. When Velmenni was launched, fund-raising for deep-tech business in India was a major challenge and the company set about exploring opportunities overseas. Looking at the merit of the technology, Velmenni was given an opportunity to be incubated with airbus in Toulouse. This gave the company a credible head-start and it set up its first office in Estonia.

“Estonia is one of the best countries in the world for R&D in deep tech,” said Minocha. “Most big telecom companies, from Ericsson to Huawei to Nokia, they all have an R&D presence in Estonia,” he said.

According to the MoD, “This grant targets strengthening secure wireless communication for the Indian defence sector, especially the navy, addressing communication challenges in modern warfare.”

“Velmenni's Li-Fi technology offers superior security and efficient performance, making it ideal for real-time communication needs of the Indian Navy. The company's interventions position it as a leader in light communication with the potential to illuminate a new era of data transmission for the Navy and in other defence applications,” it said.

[https://www.business-standard.com/external-affairs-defence-security/news/delhi-s-velmenni-wins-idx-grant-to-develop-submarine-communications-124071501120\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/delhi-s-velmenni-wins-idx-grant-to-develop-submarine-communications-124071501120_1.html)



*Tue, 16 July 2024*

## **New army chief follows Zorawar’s footsteps**

**- By Bhopinder Singh**

**(Military Veteran, Former Lt Governor Of Andaman & Nicobar Islands And Puducherry)**

Ancient Duggar region (land of warrior-Dogra spanning J&K, Himachal Pradesh, and parts of Punjab) has given maximum sacrifice and earned the highest number of gallantry awards in the annals of the Indian Armed Forces. Geographically, they have been the first line of defence against

all invading forces. The noble land birthed the likes of King Porus, and the warrior sans pareil, General Zorawar Singh. Unbeknownst to many, the legendary Zorawar's audacious conquests included regions that are now in Pakistan and China like Gilgit-Baltistan, Skardu, Hunza, to even large swathes of Tibet.

With such martial traditions, it is the only region in the country that populates not one but four fiery regiments of the Indian Army i.e., Jammu & Kashmir Rifles, Dogra Regiment, Jammu & Kashmir Light Infantry and Punjab Regiment, besides other arms, and services. But the Jammu & Kashmir Rifles or Jak Rif, has a hallowed place in history and imagination as a proud and direct legatee of those Zorawar's daredevilry traditions. The only 'State Force' of the Princely Dogra Kingdom to be fully amalgamated in the Indian Army, they remain the quintessential 'Gentlemen Soldiers' owing to pedigree, immense dignity, and professional restraint in personal conduct, but unmatched ferocity in battle. In 1947 the 'Saviour of Kashmir', Brigadier Rajendra Singh Jamwal, MVC, and his band of 300 indefatigable warriors held off Pakistani tribals for crucial three days to allow the confabulations and the landing of Indian troops in Srinagar.

The Maharaja and Commander of J&K State forces had ordered, "Brigadier Rajender Singh is commanded to hold the enemy at Uri at all costs and to the last man" – he did so by paying the "ultimate sacrifice" himself. In another theatre, Brig Sher Jung Thapa, MVC, of the J&K State Forces earned the title of "Hero of Skardu". Even the first Param Vir Chakra of India, Maj Somnath Sharma, was from the Duggarregion. Decades later, when the enemy attempted to cross over yet again, it was the unparalleled heroics of the 13th Jak Rifbattalion, atop the unforgiving heights of the Kargil War that galvanised the nation.

Two combatants from the traditional Duggar catchment areas of Palampur and Bilaspur were to send shivers down the spine of the enemy with their regimental war cries of "Durga Mata ki Jai" as they retook Point 5140. Captain Vikram Batra was to immortalise the moment with his "Yeh dil mange more" spirit and Rifleman (later Subedar Major) Sanjay Kumar would fight to defend their land just as their forefathers did, for aeons.

Both won Param Vir Chakra. Even the peace-time equivalent of gallantry, Ashok Chakra, was bestowed on 2/Lt (later Maj Gen) Cyrus Pithwalla of 17thJak Rif, to be the only 'General' officer with the highest gallantry award. It is from this deep fount of distinguished soldiering, that the 30th Chief of Indian Army Staff, General Upendra Dwivedi, takes over the reigns. Commissioned in the 18th Rif battalion, he is the first Army Chief from the decorated Regiment.

Understandably, people in the Duggar land (especially those from the Jak Rif fraternity) are justifiably proud. As 97 years 'young', Major General Goverdhan Singh Jamwal (the only General who was commissioned by Commander-in-Chief of J&K State Forces, Maharaja Hari Singh) extended congratulations and recalled the countless regimental sacrifices that, "made the State as crown of newly independent India".

Today, General Dwivedi assumes the responsibility that his regimental forefathers held with much aplomb, elan and professional acumen that befits their motto, Prashata Ranvirta or Valour in battle is Praiseworthy!

The General assumes the mantle time in most challenging times, but as the Military truism goes, "The harder the conflict, the greater the triumph". With the Indian Army, he takes over the most

disciplined, combat-hardened, and restrained institution of the nation – much like his own regimental ethos.

Regrettably, such a selfless attitude in a selfish world can often lead to being ‘taken for granted’ or lead to institutional diminishments. Transmitting that ‘voice’ for redressal to the powers-that-be will be his foremost challenge. To his singular credit, he has tenanted the most sensitive posts e.g., Army Commander of the Northern Command that dealt with dual nemesis i.e., China and Pakistan simultaneously, amongst other operational and staff posts. This makes him a worthy leader.

In a movingly reassuring optic that is so typical of the Indian Army and its inimitable ways, the good General took blessings of his family elders, laid a wreath for those who went down fighting at the National War Memorial and then exchanged greetings with religious leaders of all faiths and denominations. Much like the multi-religious and multi-castiest denomination of the Duggar land and the combatants-in-arms from his beloved JaK Rif who could be a Sikh like Honorary Captain Sundar Singh (Ashok Chakra), Parsi like Maj Gen Pithwala (Ashok Chakra) or even the martyr from his battalion i.e. 18th JaK Rif, Rifleman Arif Khan Pathan, who laid down his life on Indo-Pak Line-of-Control (LoC). JaK Rif’s pride is the nation’s pride. As regimental patriarch, Maj Gen Goverdhan Singh Jamwal dotingly noted, “General Upendra Dwivedi is the product of this great Regiment of General Zorawar Singh. You can expect results”.

<https://www.dailypioneer.com/2024/columnists/new-army-chief-follows-zorawar---s-footsteps.html>



*Mon, 15 July 2024*

## **Russia’s Su-57 Back In Reckoning For Indian Air Force; Modi, Putin Likely To Discuss Stealth Fighters For IAF**

Indian Akash is challenging the Chinese Sky Dragon-50 for a Brazilian Air Defense Missile contract. The latest reports indicate that the Brazilian military is actively assessing the AD systems.

The system’s evaluation follows the Brazilian Army’s publication of the Ordinance on June 21 to acquire the Medium Altitude/High Altitude Air Defense Artillery System Project.

The Brazilian military set the ball rolling in November 2023 when the Brazilian Army issued a Request for Quote (RFQ) for the prices of the medium-altitude air defense systems available nationally and internationally. A second RFQ was issued in February 2024 for additional information.

Brazilian military chief General Tomas Miguel Mine Ribeiro Paiva suggested a “government-to-government” agreement with India to acquire the Akash anti-aircraft missile system. He is scheduled to visit China in August to discuss potential bilateral cooperation.

A Brazilian Army delegation previously visited China in 2023 for a live fire demonstration of the Sky Dragon 50 or Tianlong-50 and the SH15 self-propelled howitzer, both produced by China North Industries Corporation.



General Paiva witnessed a live demonstration of India's Akash Air Defense Missile System in August 2023. He was also shown other Indian-made defense platforms, such as the advanced Arjun tanks and versatile Advanced Light Helicopter (ALH) Dhruva helicopters.

The event highlighted the Akash system's prowess in safeguarding airspace and showcased India's self-reliance in defense technology.

While Sky Dragon 50 has been categorized as medium-range SAM, its range is not in the public domain. On the other hand, Akash is a short-range SAM system manufactured by Bharat Dynamics Limited (BDL) to protect vulnerable areas and points from air attacks.

According to the BDL website, the Akash Weapon System (AWS) can simultaneously engage Multiple Targets in Group Mode or Autonomous Mode. It has built-in Electronic Countermeasures (ECCM) features. The entire weapon system is mounted on mobile platforms.

It can effectively engage helicopters, fighter jets, and UAVs flying in the range of 4-25 kilometers. It is fully automatic and has a quick response time from target detection to kill.

The Indian Defense Research and Development Organisation (DRDO) claims it is the first system in the world capable of engaging four aerial targets simultaneously at 25 kilometers of range by command guidance using a single firing unit.

It is highly immune to active and passive jamming. It can be transported swiftly via rail or road and deployed quickly. The project's overall indigenous content is 82 percent, which will increase to 93 percent by 2026-27.

Armenia has already placed an order to acquire the Indian-built SAM. Multiple countries from South America, the Middle East, and Africa have shown interest in acquiring the Indigenous Akash Missile system.

The Philippines and Vietnam have also shown interest in the weapon system.

### **Akash – Sky Is The limit**

The Akash weapon system's mobility, mounted on trucks, makes it agile and nimble in the battleground and enhances its survivability. The Indian Army and the Air Force have already inducted the Akash. Akash has already evoked a comparison with the Israeli Iron Dome. However, the Akash system is superior to the Iron Dome missiles. It can also intercept unmanned aerial vehicles and other types of smaller incoming projectiles, in addition to helicopters and aircraft.

The weapon system can be made fully automatic with a quick response time from target detection to kill. Its open-system architecture ensures adaptability to existing and futuristic air defense environments.

In December 2023, the IAF's Astrashakti exercise demonstrated the firepower of the Akash Missile system. A single Akash missile system engaged four unmanned aerial targets simultaneously during the training. The four targets came from the same direction in a close formation and split to attack defense assets from multiple directions simultaneously.

The Akash missile comes in two upgraded varieties: Akash-NG (New Generation) and Akash Prime. They both have a flying height of around 18 km and an operational range of 27-30 km.

Nonetheless, Akash Prime possesses an extra native active Radio Frequency (RF) seeker, which enhances its accuracy when striking airborne targets. Additional enhancements to the system comprise enhanced dependability in low-temperature conditions at elevated elevations.

According to former DRDO scientist Ravi Kumar Gupta, Akash's versatility is advantageous over other systems. He told the Eurasian Times that, unlike other surface-to-air missiles that work only in particular altitudes and climates, Akash's most significant advantage is that it can work at "all places."

"The systems are developed for diverse conditions that can withstand extreme conditions anywhere in the world, which makes them 'most reliable and sturdy.' Since the system is fully indigenous, India can fine-tune it to any buyer's requirements cost-effectively with a high degree of effectiveness against the adversary," Gupta said.

<https://www.eurasiantimes.com/indian-chinese-missiles-fight-out-for-big/>



*Mon, 15 July 2024*

## **After BrahMos Missile, India, Russia Eye Partnership On Sukhoi Fighters; May Export Su-30 Flankers To Allies**

Building on the successful BrahMos model, which helped it be exported to a third country, India and Russia are in talks to revive the production of Sukhoi Su-30MKI in India and export it to foreign buyers.

The Indian aircraft maker Hindustan Aeronautics Limited (HAL) has already completed the supply of 272 Su-30MKIs to the Indian Air Force (IAF). The aircraft will be the backbone of the country's airpower for decades.

India had contracted to acquire 272 Su-30s from Russia in batches, of which 222 were assembled by HAL at its Nasik plant under Transfer of Technology (ToT) since 2004.

Of the 272 fighters, 40 are being modified to carry the air-launched version of the supersonic cruise missile BrahMos. The IAF has already deployed its BrahMos-equipped squadron 'Tiger Sharks' at Thanjavur Air Base in Tamil Nadu in 2020. From here, the aircraft will be the sentinels of the Indian peninsula and the Indian Ocean Region (IOR).

The IAF has been contemplating ordering 12 Sukhois to replace the aircraft it has lost in crashes over the years. The purchase of the additional Sukhoi-30 MKIs has come as the IAF is grappling with a shortage of fighter squadrons. Presently, the IAF has 31 fighter squadrons against the sanctioned strength of 42.

The Sukhoi Su-30MKI (NATO reporting name Flanker-H) is a twinjet multirole air superiority fighter. In addition to India, various versions of the Su-30 are operated by China, Algeria, Indonesia, Malaysia, Uganda, Venezuela, and Vietnam.

After finishing the production for the IAF's order, the Su-30MKI production line at Nasik has been undertaking overhauls and scheduled servicing of the aircraft. Restarting the production lines with an eye on exports will help India bolster its defense exports while utilizing its existing capabilities.

Sources have confirmed that HAL and original equipment manufacturer (OEM) Russian Sukhois are in talks to build these fighter jets for export. Russia has agreed to support the production effort. During Prime Minister Narendra Modi's recent visit to Russia, the two sides agreed to work on joint manufacturing and technology transfer.

In the absence of any more orders, the HAL's Sukhoi assembly line will wind down, and the Aircraft Overhaul Division at Nasik will continue repairing and overhauling the MiG series fighter jets and Su-30MKIs in the IAF's inventory.

Over the past several years, the HAL has developed a vendor base of over 2000 Micro, Small, and Medium Enterprises (MSME) for the Sukhoi project.

### **Upgrading The Sukhois**

A major upgrade of the entire IAF Sukhoi fleet is also underway. The aircraft are likely to fly for the IAF until 2050-60. The most lethal punch of the upgraded Sukhoi pack is the three BrahMos air-to-ground missiles integrated with the aircraft.

The aircraft's enormous size, considered an impediment in the present electronic warfare-driven battlefield, has just been turned into a massive advantage. It is the only IAF fighter jet capable of carrying the mighty BrahMos.

The Sukhoi Su-30MKI (I stands for India) has undergone significant indigenization efforts by the IAF and HAL. After recent upgrades, the aircraft has 78 percent indigenous components. This transformation aims to reduce reliance on Russian origins, making the Su-30MKI predominantly Indian-built and maintained.

Indian Gas Turbine Research Establishment had upgraded the Su-30MKI's AL-31F engines domestically, increasing its service life by an additional 1,500 flying hours.

Apart from weapons, the new Electronic Warfare Suite has given more teeth to the Super Sukhois. EW Capabilities of Sukhoi-30MKI would be enhanced by indigenous High Band Jammer Pod (HBT), Dhruvi Radar Warning System, and a Dual Color Missile Approach Warning System.

The Jammer Pod works by offensively denying, disrupting, and degrading the enemy's air defense systems and communications. It can non-kinetically attack more targets and at greater distances. So, if there ever is a next engagement with F-16s, the Indian Super Sukhois will be a more formidable adversary than in 2019.

The latest 12 Su-30MKI to be acquired by the IAF will be the most advanced of the type. These fighter jets will be manufactured in India with the help of a Russian OEM. They will have a greater percentage of indigenization and use the latest Indian weapon systems and radars.

In such a scenario, producing the Russian-origin fighter jet under the Make-in-India program to be exported to a friendly third country would be prudent. Recently, India has exported BrahMos supersonic cruise missiles to the Philippines. The missiles are manufactured under an Indo-Russian Joint Venture.

## **The Indian Su-30MKI**

The Su-30MKI deal was dictated by not only India's geopolitical compulsions but also to lend a helping hand to the Russian defense industry reeling under the aftershock of the Soviet Union's collapse in 1991. The Russian economy was in shambles, and defense production facilities were fragmented and scattered in different countries not under Soviet control.

At this stage, India tried to bail out the Russian Defence Industry. With the IAF already flying the MIG series fighter jets, India opted for Su-30 Flankers. The aircraft was customized for the IAF and was designated Su-30 MKI.

The three-billion-dollar deal with India in 2000 to grant a "deep" license to New Delhi paved the way for indigenous production of all components of SU-30MKI over 20 years, including 'AL-31FP' thrust-vectoring engines. A few years before the Indian deal, Russia sold Su-30s to China but did not give a license to manufacture the aircraft.

The Kommersant-Vlast Weekly described the Indo-Russian project as Russia's "most successful" defense deal specially tailored to meet the buyer country's strict requirements. Moscow cannot sell this jet to any third country without New Delhi's "written" consent as it has been developed on Indian money, and India has a share in technology rights.

The Indian Sukhoi has advanced Israeli avionics and electronic warfare systems, which distinguish it from the standard Su-30s or the Chinese versions. Additionally, the SU-30 MKI has various missiles, including the Russian-origin R73/77 and the Indian-made Astra and Brahmos.

<https://www.eurasiantimes.com/after-brahmos-missile-india-russia-eye/>

## **Science & Technology News**



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*Mon, 15 July 2024*

### **BRIC-THSTI hosts the industry meet, SYNCHN 2024 - Synergy in science built through elements of collaboration for high quality data & expertise in NCR Biotech Cluster**

Translational Health Science and Technology Institute (THSTI) an institute of Biotechnology Research and Innovation Council (BRIC), Department of Biotechnology, Govt. of India hosted a successful industry meet, SYNCHN 2024 (Synergy in science built through elements of collaboration for high quality data & expertise in NCR Biotech Cluster), on July 14th, 2024 in its campus. This event brought together stakeholders from the biotechnology industry, including

representatives from startups, established companies, and policymakers. The focus of SYNCHN 2024 was to foster and strengthen academia-industry collaborations, with a particular emphasis on THSTI's role in propelling biomanufacturing advancements. Prof. Vinod K. Paul, Member, NITI Aayog graced the occasion as the Chief Guest. Prof. Paul commended the leadership of THSTI and DBT for their initiative in hosting SYNCHN 2024. He expressed the government's strong support for academia-industry collaborations, deeming them essential for India's progress. Emphasizing the urgency of such partnerships, Prof. Paul called for 100-day missions to drive bioinnovation and establish India as a global supply chain leader, aligning with the Atmanirbhar Bharat vision.

Prof. Nirmal K. Ganguly, former Director General of the Indian Council of Medical Research (ICMR), was the Guest of Honor. In his address, Prof. Ganguly highlighted the critical importance of collaboration between academic and industrial sectors in the field of medical biotechnology. He commended THSTI for its efforts in bringing together stakeholders from diverse areas with a shared focus on bio-innovation and biomanufacturing.

Prof. Ganesan Karthikeyan, Executive Director of THSTI, in his address shared the vision behind SYNCHN 2024 and the significance of industry partnerships in advancing translational research. Prof. Karthikeyan emphasized THSTI's commitment to leveraging its research expertise and cutting-edge facilities to empower industry partners and further translational research efforts. He also expressed his gratitude to DBT for their support in facilitating SYNCHN 2024.

In his address to the gathering, Dr. Rajesh Gokhale, Director General, Biotechnology Research and Innovation Council (BRIC) and Secretary, Department of Biotechnology appreciated the efforts of THSTI in hosting SYNCHN 2024 by bringing together a diverse group of stakeholders. He highlighted the importance of academia-industry collaboration for bio-innovation and said that the NCR Biotech cluster is well-equipped to meet industry demands. During the industry meet, representatives from industry and start-ups shared their insights on the perspectives of academic-industry collaborations and appreciated the initiative of THSTI to bring together various stakeholders. Some of the key industry speakers were from Serum Institute of India, Panacea Biotech, Miltenyi Biotech, Indian Immunologicals Limited, etc.

SYNCHN 2024 had focused parallel breakout sessions, fostering one-on-one interactions between industry representatives and THSTI's principal investigators. Delegates also had a tour of THSTI's research laboratories and facilities during their interactions at THSTI. The industry representatives also interacted with young researchers at THSTI and provided valuable insights into industry expectations for doctoral graduates.

### **About BRIC**

The Department of Biotechnology (DBT), Ministry of Science and Technology, with the approval of the cabinet, has subsumed its 13 Autonomous Institutions (AIs) and created one Autonomous Body, the Biotechnology Research and Innovation Council (BRIC), as a registered Society. BRIC is intended to integrate the multi-disciplinary research, training, and innovation programs operational across various DBT institutions for maximum impact and establish structures that leverage existing strengths to build systemic collaborations, identify convergent directions, and set a clear path for translation and asset monetization.

### **About BRIC-THSTI**

The institute acts as a catalyst to translate fundamental discoveries by building rigorous clinical research capacity and enabling a faster transition of discoveries from bench to bedside. THSTI is housed within the NCR Biotech Science Cluster in Faridabad. The institute has four core facilities viz. Small Animal Facility, Data Management Center, Biorepository, and Bioassay Laboratory that serves not only the research programs of THSTI but also the NCR Biotech Science Cluster and other academic and industrial partners.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2033196>



*Mon, 15 July 2024*

## **Scientists confirm cave on moon that could be used to shelter future explorers**

Scientists have confirmed a cave on the moon, not far from where Neil Armstrong and Buzz Aldrin landed 55 years ago, and suspect there are hundreds more that could house future astronauts. An Italian-led team reported Monday that there's evidence for a sizable cave accessible from the deepest known pit on the moon.

It's located at the Sea of Tranquility, just 250 miles (400 kilometers) from Apollo 11's landing site. The pit, like the more than 200 others discovered up there, was created by the collapse of a lava tube.

Researchers analyzed radar measurements by NASA's Lunar Reconnaissance Orbiter, and compared the results with lava tubes on Earth. Their findings appeared in the journal *Nature Astronomy*.

<https://indianexpress.com/article/technology/science/scientists-confirm-cave-on-moon-to-shelter-future-explorers-9455212/>



*Tue, 16 July 2024*

## **Early enactment of Space Activities Act, tax cuts can nurture Indian Space Sector**

The launch of the Indian National Space Promotion and Authorisation Centre (IN-SPACe) in 2020, a single window clearing agency for all space operations from India, and Indian Space Association (ISPA), a common platform for private Indian companies to voice their aspirations in the space domain, together positioned the private sector as having a significant role to play in India's space

ambitions going forward. The role of the private sector was cemented by the rollout of the Indian Space Policy in 2023. Strategic initiatives by the government can further boost the participation of private industries in the space sector, and this includes introducing formal space laws.

Sreeram Ananthasayanam, Partner at Deloitte India says, “While the India Space Policy 2023 highlights the government’s vision for the sector, the industry believes that the possibility of a policy not being enforceable in a court of law is unfavourable for the sector. This is because challenges around international and national obligations and liabilities, and enforcement of standards can be conclusively answered only in the form of legislation. Hence, the early enactment of the much-anticipated Space Activities Act may be optimal for the Indian space ecosystem.”

### **Space startups**

The government has decided not to tax satellite launches, which is great, but it would be even better if the equipment on the ground, as well as the rockets themselves, are not taxed as well. Making and launching satellites remains expensive because companies have to pay tax on the things they need to develop and deploy satellites. Goldie Dhama, Partner at Deloitte India says, “The industry has acknowledged GST exemption provided on satellite launch services. However, the exemption can be extended to other critical components of satellites, ground systems and launch vehicles for the good of the sector’s value chain.

While such exemption reduces GST cost on output activity of satellite launch services, it is still important to consider the resultant impact on the input tax credit on the procurement of goods and services. This increases the cost of providing service. Therefore, a similar exemption should be provided for businesses procuring key goods and services (including capital goods) for satellite launch services. This will help reduce the GST input tax credit costs and the intended benefit would be enjoyed by the supply chain.”

### **There is a need to support the expected large investments in the Space Sector**

As India is moving to increasing its leadership in the Space Domain, especially on behalf of the Global South. To realise this vision, significant investments from the private sector are expected. The government can consider allowing these companies to import the requisite hardware or materials at cheaper rates, and provide a respite from taxation at least till they find their legs.

Shilpy Chaturvedi, Partner at Deloitte India says, “As space industrial parks planned to be developed in various states, many NGEs (legacy + start-ups) plan to make large greenfield investments. Therefore, other initiatives, such as tax exemptions/tax holidays/accelerated depreciation for companies directly or indirectly engaged in space sector activities, must be considered. Furthermore, specific customs duty exemption and concessions on import of goods/equipment/machinery used to manufacture notified goods under the Import of Goods at Concessional Rate of Duty scheme (IGCR) should be considered for the sector.” By creating a more favourable fiscal environment and enacting the necessary legislation, India can ensure sustainable growth and leadership in the space domain, encouraging innovations and investments from the private sector.

<https://www.news9live.com/science/early-enactment-of-space-activities-act-tax-cuts-can-nurture-indian-space-sector-2618904>

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