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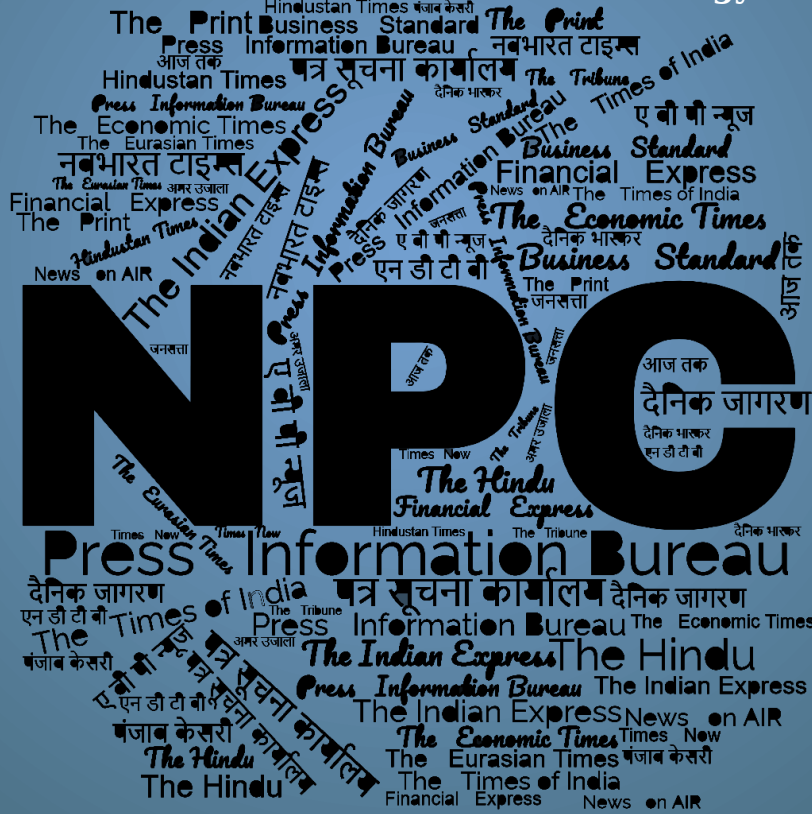
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# समाचार पत्रों से चयित अंश Newspapers Clippings

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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## **What to Expect from Agni-Prime, the New Generation Ballistic Missile**

Agni-Prime was successfully flight-tested by the Defence Research and Development Organisation (DRDO) from Dr A P J Abdul Kalam Island off the coast of Odisha on June 7.

This was the "first pre-induction night launch" of the Agni-Prime conducted by the tri-service Strategic Forces Command (SFC).

Agni-P or Agni-Prime is a new generation nuclear-capable medium-range ballistic missile (MRBM) developed by the DRDO that incorporates technological advances from Agni-IV and Agni-V and is considered a successor for Agni-I and Agni-II missiles in the operational service of the SFC. Agni-Prime, with a strike range of 1,000 to 2,000 km, has significant upgrades, which include composite motor casing, manoeuvrable reentry vehicle (MaRV), improved propellants, and navigation and guidance systems.

It is a two-stage, surface-to-surface, road-mobile and solid-fueled missile which is transported by a truck and launched via a canister, like the country's first intercontinental ballistic missile (ICBM), Agni-V (over 5,000 km). It is a ballistic missile with dual redundant navigation and guidance system.

### **Features**

Although Agni-Prime looks similar to Agni-III, the weight is reduced by half. Agni-P will replace older generation missiles such as Prithvi-II (350 km), Agni-II (2,000 km), Agni-III (3,000 km) and Agni-4 (4,000 km) ballistic missiles. Agni-Prime incorporates upgrades such as propulsion systems, composite rocket motor casings, and advanced navigation and guidance systems.

Along with Agni-V, Agni-P will provide India with stronger deterrence against countries such as China and Pakistan. While Agni-V brings all of China within its strike range, Agni-P seems to have been developed to counter Pakistan's forces.

Agni-P is developed to achieve maximum manoeuvrability against missile defence systems and higher accuracy for precision strikes.

### **Test-firing of Agni-Prime**

On June 28, 2021, the DRDO successfully test-fired Agni-P for the first time from Dr Abdul Kalam Island in Odisha. It carried two multiple independently targetable reentry vehicles (MIRV) that delivered the warheads to two separate locations. Agni-P followed a textbook trajectory, meeting all mission objectives with high accuracy. The second test happened on December 18, 2021, from Dr APJ Abdul Kalam island off the coast of Odisha. The DRDO successfully tested the Agni-P for reliable performance of all the advanced technologies integrated into the system. On October 21, 2022, Agni-P was successfully test-fired for the third time to achieve maximum range. On June 7,

2023, Agni-P was successfully flight-tested as part of the first pre-induction night launch conducted by the SFC after three successful developmental trials of the missile.

### **List of all Agni missiles**

In the 1980s, India started developing the Agni missile series under the Integrated Guided Missile Development Program (IGMDP) led by former president Dr A P J Abdul Kalam. IGMDP received approval from the government in 1983.

IGMDP was aimed at making India self-sufficient in missile technology. The programme has five missiles P-A-T-N-A: Prithvi, Agni, Trishul, Nag, and Akash.

Agni-P is the sixth missile in the Agni (missile) series of ballistic missiles. It is a family of medium to intercontinental range ballistic missiles developed by India, named after one of the five elements of nature.

Agni-I is a two-stage Agni technology demonstrator with a solid-fuel first stage. It was first tested at the Interim Test Range in Chandipur in 1989. It has a strike range of 700-1200 km and can carry a payload of 1,000 kg. As compared to Agni-II, Agni-I is less costly, simple, accurate and more mobile.

Agni-II is a two-stage ballistic missile with a strike range of 2,000-3000 km. It can carry a payload of 1,000 kg and was first launched on August 9, 2012.

Agni-III is the third in the Agni series of missiles. It is an intermediate-range ballistic missile with a 3,500-5,000 km range. Agni-III was first tested on July 9, 2006, from Wheeler Island off the coast of the eastern state of Odisha. It can carry a payload of 1,500 kg.

The fourth missile in the series is Agni-IV. It is an intermediate-range ballistic missile with a range of around 4,000 km. It was first tested on November 15 2011, and September 19, 2012, from Wheeler Island off the coast of eastern Orissa. Agni-IV bridges the gap between Agni II and Agni III. Agni-IV can take a warhead of 1,000 kg. With state-of-the-art technologies, Agni-IV is designed to increase kill efficiency and higher range performance. It can be fired from a road-mobile launcher.

Agni-V is a solid-fuelled intercontinental ballistic missile (ICBM) which has a strike range of over 7,000 km. It was first test-fired on April 19 2012, from Wheeler Island. The second test launch was successfully done on September 15, 2013. The last test launch of Agni-V was conducted on December 15, 2022, from Abdul Kalam Island, Odisha.

Agni-VI is a MIRV-capable intercontinental ballistic missile currently under development by the DRDO. Agni-VI is reported to be the most advanced version of the Agni missiles.

[https://www.business-standard.com/india-news/what-to-expect-from-agni-prime-the-new-generation-ballistic-missile-123060900555\\_1.html](https://www.business-standard.com/india-news/what-to-expect-from-agni-prime-the-new-generation-ballistic-missile-123060900555_1.html)

# **ThePrint**

*Sun, 11 Jun 2023*

## **Russian Envoy Lauds BrahMos Aerospace on its Silver Jubilee**

Russian Ambassador to India, Denis Alipov, participated in the Silver Jubilee celebration programme of BrahMos Aerospace here on Sunday. Alipov congratulated the team led by Atul Dinkar Rane for achieving great global prospects. DRDO's outstanding scientist Atul Dinkar Rane

took over as the new Chief Executive Officer and Managing Director of the BrahMos Aerospace Limited which manufactures the BrahMos supersonic cruise missile. “Took part in the Silver Jubilee celebration of #BrahMos Aerospace — an exemplary #RussiaIndia project and true testament to India’s self-reliance. Great prospects of going global. Kudos to the team led by Dr Atul Dinkar Rane!” Alipov tweeted.

The BrahMos Aerospace is an Indo-Russian multinational aerospace and defence corporation, with core manufacturing concentrations in Cruise missiles. It was founded as a joint venture between India’s Defence Research and Development Organisation and NPO Mashinostroyeniya of Russia.

A couple of days ago, Alipov said that the ‘special Russia-India strategic partnership’ has shown strength and is ‘growing stronger as ever’.

“There have been lies about Russia on a daily basis and on a global scale. Efforts are being made to disrupt Russia – India relations,” Envoy Alipov said during the state reception hosted in the national capital that was dedicated to the National Day of the Russian Federation.

Lauding the ‘special Russia – India strategic partnership’, the envoy said, “The indispensable truth however is- the special Russia-India strategic partnership has shown strength and we keep growing stronger than ever”. From the Indian side, Minister of State for Ministry of External Affairs and Education Rajkumar Ranjan Singh attended the event along with other senior officials of the government of India. Ambassadors and military attaches of other countries were also present on the occasion. During the celebrations, Ratheesh Nair, Honorary Consul of Russia in Trivandrum was awarded the ‘Order of Friendship’ in recognition of his exceptional work in the promotion of Russia-India bilateral ties.

Ambassador Alipov also underscored the commitment to “enriching achievements of the Russian-Indian special and privileged strategic partnership” while also highlighting Nair’s considerable contribution to the promotion of bilateral ties. The Moscow Cossack Choir’s performance with Russian folk songs and rousing dances, supported by the Government of Moscow, became a bright decoration of the evening that ended with festive fireworks.

<https://theprint.in/world/russian-envoy-lauds-brahmos-aerospace-on-its-silver-jubilee/1623385/>

## Defence News

## Defence Strategic: National/International



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

**Ministry of Defence**

*Sat, 10 Jun 2023*

## **Combined Operations of INS Vikramaditya and INS Vikrant**

**The 'Sky' is the Limit: Showcasing Indian Navy's Multi-Aircraft Carrier Force**

Indian Ocean - The Indian Navy showcased its formidable maritime capabilities with a spectacular display of multi-carrier operations and the coordinated deployment of more than 35 aircraft in the

Arabian Sea. This demonstration of naval prowess underscores India's commitment to safeguarding its national interests, maintaining regional stability, and fostering cooperative partnerships in the maritime domain. It also marks a significant milestone in Indian Navy's pursuit of enhancing maritime security and power-projection in the Indian Ocean, and beyond. The exercise involved seamless integration of two Aircraft Carriers INS Vikramaditya and the indigenously built INS Vikrant- along with a diverse fleet of ships, submarines and aircraft, showcasing India's technological expertise in the maritime domain.

INS Vikramaditya and INS Vikrant, centre-pieces of the exercise, serve as 'floating sovereign airfields', providing a launch platform for a wide array of aircraft, including MiG-29K fighter jets, MH60R, Kamov, Sea King, Chetak and ALH helicopters. These mobile bases can be positioned anywhere, allowing for increased mission flexibility, timely response to emerging threats and sustained air operations to safeguard our national interests across the globe. In addition, they provide our friends with an assurance that the Indian Navy is capable and ready to support our 'collective' security needs in the Region.

The successful demonstration of two-carrier battle group operations serves as a powerful testament to the pivotal role of sea-based air power in maintaining maritime superiority. As India continues to strengthen its security apparatus, significance of Aircraft Carriers will remain paramount in shaping the nation's defence strategy and promoting regional stability.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1931254>

## THE ECONOMIC TIMES

Sat, 10 Jun 2023

### **Navy Holds Exercise in Arabian Sea with Two Aircraft Carriers, More than 35 Jets**

Indian Navy on Saturday showcased its capabilities with a display of multi-carrier operations and coordinated deployment of more than 35 war jets from two aircraft carriers in the Arabian Sea.

The naval exercise is significant as it underscores India's commitment to safeguarding its national interests, maintaining regional stability, and fostering cooperative partnerships in the maritime domain in the backdrop of China's growing interest in the Indian Ocean Region.

The exercise involved seamless integration of two aircraft carriers--INS Vikramaditya and the indigenously built INS Vikrant--along with a diverse fleet of ships, submarines and aircraft, showcasing India's technological expertise in the maritime domain, according to an official statement.

INS Vikramaditya and INS Vikrant served as "floating sovereign airfields" for aircraft including MiG-29K fighter jets, MH60R, Kamov, Sea King, Chetak and ALH helicopters. These mobile bases can be positioned anywhere, allowing for increased mission flexibility, timely response to emerging threats and sustained air operations.

In addition, they provide India's partners with an assurance that Indian Navy is capable and ready to support "collective" security needs in the region, according to the statement. This comes close on the heels of India, France and the UAE conducting their first trilateral Maritime Partnership Exercise in the Gulf of Oman on June 7 and 8. During the maiden edition of the exercise, a wide spectrum of operations at sea, such as surface warfare involving tactical firing and drills for missile engagements, close-quarter manoeuvres, advanced air defence exercise with French Rafale and the

UAE Dash 8 MPA, helicopter cross landing operations, and drills for replenishment at sea were undertaken by the participating units.

The exercise also saw cross embarkation of personnel that facilitated exchange of best practices. The exercise has strengthened maritime ties between the navies and enhanced interoperability to address traditional and non-traditional threats in the maritime environment, thus ensuring safety of mercantile trade and freedom of navigation at high seas in the region, officials said.

<https://economictimes.indiatimes.com/news/defence/navy-holds-exercise-in-arabian-sea-with-two-aircraft-carriers-more-than-35-jets/articleshow/100903829.cms>

## THE ECONOMIC TIMES

*Fri, 09 Jun 2023*

### **SU-30MKI Jets of IAF Carry out Long-Range Mission in Indian Ocean Region**

A fleet of Su-30MKI jets of the Indian Air Force (IAF) carried out a strategic mission over the Indian Ocean region for eight hours, days after a similar operation was carried out by four Rafale aircraft. People familiar with the operation said the Su-30MKI jets flew over the south-western region of the Indian Ocean on Thursday, demonstrating their operational prowess and capability to carry out long-range missions. The six-hour mission involving the Rafale fighter aircraft last month covered the eastern region of the Indian Ocean, they said.

"Another outing into the Indian Ocean Region! This time, with #IAF Su-30s flying nearly eight hours, on a different axis. Both Seaboards covered," the IAF tweeted on Friday.

The IAF carried out the two missions at a time when China has been ramping up its presence in the Indian Ocean region, which is largely considered as the backyard of the Indian Navy.

The IAF did not divulge the details of the operation carried out on Thursday as well as late last month. The number of aircraft involved in the operation is not known.

The Rafale jets are India's first major acquisition of fighter planes in 23 years after the Sukhoi jets were imported from Russia.

The Rafale jets are capable of carrying a range of potent weapons.

<https://economictimes.indiatimes.com/news/defence/su-30mki-jets-of-iaf-carry-out-long-range-mission-in-indian-ocean-region/articleshow/100881659.cms>

## The Tribune

*Sun, 11 Jun 2023*

### **Stay Combat-Ready, Keep Updating Skills: Army Chief to IMA Graduates**

Army Chief Gen Manoj Pande today told cadets at the Indian Military Academy (IMA) how their resilience, determination and unwavering resolve would be the bedrock of success. He asked them to keep updating their skills to deal with the challenges of rapidly changing dynamics of combat.

General Pande was reviewing the passing-out parade of cadets at the IMA.



A total of 374 gentleman cadets, including 42 from seven friendly foreign countries, successfully passed out from the portals of the IMA.

While the Sword of Honour was awarded to Academy Under Officer Mihir Banerjee, the gold medal for standing first in the order of merit was presented to Senior Under Officer Abhimanyu Singh. The silver medal was awarded to Mihir Banerjee. The bronze medal was awarded to Kamalpreet Singh.

Junior Under Officer Sury Bhan Singh stood first in the order of merit from the technical graduate course.

“The dynamics of combat are rapidly changing with fast paced development of technology. The battle space has become more complex. In such a scenario, technical prowess, mental agility, critical thinking and quick response will be the key to success,” said General Pande, and asked the newly commissioned officers to continuously enhance their competency.

<https://www.tribuneindia.com/news/nation/stay-combat-ready-keep-updating-skills-army-chief-to-ima-graduates-516002>

## THE ECONOMIC TIMES

Sun, 11 Jun 2023

### **Indian Army Exposes ISI's Dangerous Move to Involve Women, Juveniles in Terror Network**

A 'dangerous move' by Pakistan's Inter-Services Intelligence (ISI) and heads of terror groups to rope in women and juveniles to carry weapons and messages has come to light amid a decline in the use of traditional means of communication by terrorists in Kashmir valley, a top army officer has said. The General Officer Commanding of Srinagar-based 15 Corps, also known as Chinar Corps, Lt Gen Amardeep Singh Aujla also said the forces need to be cautious as people sitting across the Line of Control (LoC) are busy scheming and planning to disturb the prevailing peaceful atmosphere.

"Today's threat, as I see it, is involving women, girls and juveniles in carrying messages, drugs or, at times, weapons. So far, the army has detected some cases highlighting an emerging trend which in itself is a dangerous move that Pakistan's ISI and heads of 'tanzeems' (terror groups) have adopted. We, along with other agencies, are jointly working out on this," Lt Gen Aujla told PTI.

Asked if it means that terror groups have stopped using mobile communication, the army officer said the Techint (technical intelligence) signatures have reduced considerably. Also, many Over Ground Workers (OGWs) who acted as conduits for them have been picked up.

"Therefore, now women, girls and juveniles have been roped in as an alternative to mainly carry messages," the top army officer in the valley said.

As part of the deradicalisation strategy, the army, with the cooperation of the Union Territory administration, has undertaken a series of initiatives - one of which is the 'Sahi Rasta' (right path) programme that has in recent times proved to be a game changer in the right earnest.

"We have come a long way in ensuring peace and stability in Kashmir, but I will be naive to claim an early victory as we feel that every gain needs to be cemented before achieving lasting peace in the Union territory," he said. Without naming Pakistan, Lt Gen Aujla said the challenge is that the neighbouring country has not given up on its intent and is repeatedly creating trouble on both sides of Pir Panjal. The latest infiltration bid in the Machil sector of north Kashmir is a testimony of his

blatant indulgence. He stressed that all security agencies, including those from the Union Territory administration, were well geared up to thwart any nefarious designs of the adversary.

"The propensity of infiltration along the Line of Control in Kashmir may have shown some decrease but there have been some attempts in South of Pir Panjal as well as neighbouring Punjab.

"We need to be cautious and not let our guard down at any cost. National security is our prime responsibility. We will leave no stone unturned to maintain it," he said.

"We are cognisant of the likely threats from across and accordingly ensure to the best of our abilities that the current peace and normalcy achieved through collective efforts is not put at risk by inimical elements," he said.

He said the mounting pressure and actionable intelligence-based operations have kept the terrorists on their toes and a majority of them have either "migrated out of the valley or have been lying low". The "invisible form of terrorism is a cause of concern and we are jointly working towards weeding out this phenomenon", the officer said. "It is difficult to give the exact number of terrorists either local or foreign but to my estimates, it is definitely at its lowest since the past 33 years," the officer said.

The terror attacks and encounters between terrorists and security forces have witnessed a decline in Kashmir this year which reflects a positive sign and augurs well towards peace and normalcy in all spheres and domains, he said. The officer said there is a perceptible shift in the sentiments of the local population towards violence which is highly commendable and "the challenge for us is to sustain it in the coming times."

The need of the hour is to strengthen the confidence of the population with the security forces and the relevant government machinery, he said.

"After all, if we have been able to reach this point, it is thanks to the cooperation of the people," Lt Gen Aujla said.

Based on the changing security environment, "we have also amended our methodology and given in for more people-friendly operations," the officer said.

"I am optimistic that collectively we will be successful in ushering a new normal of peace in Kashmir in the days to come," he said.

Lt Gen Aujla complimented the synergy between all security forces in ensuring an incident-free G-20 meeting held recently in the valley.

<https://economictimes.indiatimes.com/news/defence/indian-army-exposes-isis-dangerous-move-to-involve-women-juveniles-in-terror-network/articleshow/100916021.cms>

## THE ECONOMIC TIMES

*Mon, 12 Jun 2023*

### **India Organises First-ever Defence Seminar and Exhibition in Colombo to Boost Defence Industrial Partnership**

India is eyeing to expand its defence industrial partnership with Sri Lanka amid China's growing presence in the Southern Indian Ocean Region.

The first-ever India-Sri Lanka defence seminar and exhibition was held at Colombo last week to identify newer areas of cooperation whilst ensuring capacity building of Sri Lanka Armed Forces.

India displayed a range of defence equipment at the event that was attended by Sri Lanka State Minister for Defence Pramitha Bandara Tennakoon.

The seminar highlighted the capability and capacities of the two countries in defence equipment manufacturing, an official said. The official pointed out that the Sri Lanka Armed Forces have been successfully operating a wide range of Indian defence equipment like Indra Radar, Advanced Offshore Patrol Vessels, L 70 Guns, Dornier Aircraft and Army training simulators.

The Indian Armed Forces, on its part, use Fast Interceptor Craft and refit of Floating Dock at Colombo. More recently, the Government of India has committed to the supply of Floating Dock, Maritime Rescue Coordination Centre and Dornier aircraft which would ensure capacity building of Sri Lanka Armed Forces. The above-mentioned official said that India is willing to share best practices with Sri Lanka on defence hardware.

Sri Lanka is one of India's major development partners and this is an important pillar of bilateral ties. The Government of India has extended a \$150 million Defence Line of Credit to the Government of Sri Lanka. Out of this, \$100 million credit has been utilised.

Meanwhile, Maldives and India last week signed ten new agreements to give impetus to their partnership in the Indian Ocean Region.

The MoUs were exchanged during a ceremony held at the Maldivian Ministry of Foreign Affairs attended by Minister of State for External Affairs V Muraleedharan and Maldivian Foreign Minister Abdulla Shahid.

Launched under India's grant assistance, the MoUs will seek implementation of high-impact projects in 11 atolls in the Maldives while covering diverse sectors including arts, sports, education, and health.

Taking to Twitter, while elaborating on the details of the agreements, Muraleedharan said, "Our development partnership with the Maldives is going stronger. Glad to join H.E. Abdulla Shahid to witness exchange of 10 MoUs. The MoUs will facilitate implementation of development projects in areas of arts, sports, education and health, under India's grant assistance."

<https://economictimes.indiatimes.com/news/defence/india-organises-first-ever-defence-seminar-and-exhibition-in-colombo-to-boost-defence-industrial-partnership/articleshow/100924593.cms>



Sat, 10 Jun 2023

## Indian Army's Air Defence Widens Wings

By *Dinakar Peri*

The Indian Army's reorientation from the western borders to the northern borders in the aftermath of the 2020 standoff with China, along with lessons from the ongoing war in Ukraine, are impacting the ongoing transformation of the Army Air Defence (AAD).

A range of new systems, mostly indigenous, are being inducted, with new technologies factoring in the new realities. Bringing it all together is a new automation initiative under Project Akashteer, which will build a comprehensive air defence picture for the monitoring, tracking and shooting of air defence assets.

### Networked automation

The nearly ₹2,000 crore contract for Akashteer, a networking and automation project on the same lines as the Indian Air Force's Integrated Air Command and Control System network, was signed in

March 2023. “It is a major initiative and the entire implementation should be done by March 2024,” a defence source said, noting that this was probably the fastest project in the army, given that the approval of qualitative requirements only came through in December 2019.

“This will link all the radars and control centres of AAD and consolidate the air defence picture, removing duplications or overlaps and also integrate all the weapons. The need today is for a comprehensive air defence solution,” the source explained. Akashteer will also be able to communicate with the IAF’s network.

### **Shifting focus**

Before the 2020 standoff with China, the Army’s focus was predominantly on India’s western border with Pakistan. However, air defence requirements on the northern borders are different from the western front; the need is for light-weight radars and weapon systems with mobility for deployment in the mountains while catering to the infantry’s requirements, said a source, detailing the kind of systems under procurement.

The war in Ukraine has also changed the requirements, forcing the army to factor in new threats to air defence such as unmanned aerial vehicles or UAVs, loitering munitions, swarm drones and cruise missiles.

### **New technology**

The Ukraine conflict has shown that Man Portable Air Defence Systems (MANPADS) are highly effective when in range with night vision enabled. The Indian Army is focussing on laser beam-riding MANPADS and has already initiated the procurement process. Another focus area is gallium nitride-based modules for radars which can significantly reduce weight, a critical factor in the mountains. Another emerging threat to air defences is loitering munitions, for which the best counter is high-rate gun systems, better optic sights, fragmented ammunition and active electronically scanned array radars.

### **Inducting new SAMs**

In March 2023, the Defence Ministry signed a contract worth more than ₹8,160 crore with Bharat Dynamics Limited for two regiments of improved Akash surface-to-air missile systems. These Akash regiments are tailor-made for the mountains, with modifications having been made after a year of trials, two sources stated. The deliveries and induction should happen in the next couple of years as the system is already under production and domestic capability has come up well, sources said.

While the indigenous Akash is a short range missile, the medium range surface-to-air missile project, on which the Defence Research Development and Organisation (DRDO) is collaborating with Israel, is now in the process of induction. DRDO is also indigenously developing a quick reaction surface-to-air missile, another critical need, and has already tested it several times. On the lower end of the weapons spectrum are the air defence guns, the procurement effort for which has been on since 1986. Fresh bids in this segment are being opened now, sources said.

### **Hardware shortage**

However, officials acknowledged that the shortage of components and hardware for air defence systems worldwide, since the beginning of the war in Ukraine, could potentially slow the pace of inductions. For instance, there is a shortage of chips for radars that could slow down manufacturing and deliveries as these are mostly imported, one official noted.

The Army Air Defence — called Air Defence Artillery till 2005 — has been in existence since 1940, though its ground-based air defences have increasingly moved to the Air Force. The modernisation of the AAD has stagnated post-1996; over the last decade too, several attempts at

procurement in various segments were unsuccessful. It has now picked up pace and with the push for indigenisation, there are several made-in-India systems coming in, defence sources noted.

<https://www.thehindu.com/news/national/indian-armys-air-defence-widens-wings/article66954761.ece>



*Fri, 09 Jun 2023*

## **India Likely to Sell BrahMos Missiles to Vietnam in Deal Ranging up to \$625 Million**

India is likely to sell its highly-accomplished BrahMos missiles to Vietnam, signaling a deepening defence cooperation between the two countries. Sources told Zee Business that Vietnam is expected to place an order between three to five units of BrahMos missiles. And with each battery, consisting of multiple missiles, projected to be priced at approximately \$125 million, the potential deal could range between \$375 million and \$625 million - depending on the number of units Vietnam intends to acquire. This comes close on the heels of India's successful sale of three units of BrahMos missiles to the Philippines last year for \$375 million. The missiles, known for their versatility, precision, and supersonic speed, have gained a reputation as one of the most advanced anti-ship and land-attack missiles in the world. Apart from Vietnam, it is also reported that Indonesia has shown interest in acquiring the BrahMos missiles, further underlining the growing demand and appeal of this Indian-Russian collaboration.

The development comes close to Vietnam's Defence Minister Phan Văn Giang's visit to New Delhi on 19 June, adding significance to this potential deal. The visit presents an opportunity for both countries to enhance their bilateral relations and strengthen their defence capabilities.

BrahMos missiles, jointly developed by India and Russia, have been highly sought-after by countries seeking to bolster their defense capabilities due to their supersonic speed, precision guidance, and versatility. With India's increasing role as a major exporter of defence equipment, the sale of BrahMos missiles to Vietnam could help deepen strategic ties between the two nations. As both countries strive for stability and security in the region, this potential deal could contribute to a stronger defense network in Southeast Asia.

BrahMos Aerospace, is a joint venture between India's DRDO (Defence Research and Development Organisation) and Russia's NPOM (NPO Mashinostroyeniya).

<https://www.zeebiz.com/india/news-exclusive-india-likely-to-sell-brahmos-missiles-to-vietnam-in-deal-ranging-up-to-625-million-239380>



*Sat, 10 Jun 2023*

## **India will soon have a 'Buffet Spread' of Indigenously-Built Fighter Aircraft to Serve the Needs of IAF, Says the Man Behind Tejas**

A few years from now, India will have its own set of indigenously-built fighter aircraft, and the spread of fighters will address all the needs of the Indian Air Force, right from the light and fast

inceptor fighters to deep-strike fighter planes, says Kota Harinarayana, former programme director and chief designer of the Light Combat Aircraft (LCA), which is now called 'Tejas'.

Speaking to The Hindu here on June 10 (Saturday), Dr. Harinarayana said that the country had already successfully launched and commissioned the LCA MK-I (Tejas MK-I), while LCA MK-II was undergoing advanced trials.

"While Tejas MK-I is a fourth generation fighter, the MK-II will be the fifth generation fighter with more stealth features," Dr. Harinarayana said.

"We also have the Advanced Medium Combat Aircraft (AMCA), for which trials are going on," he added.

According to him, while MK-I is a highly sophisticated fighter, which is between the fourth and fifth generation fighter planes, MK-II will be the fifth generation fighter with more stealth features and deep-strike capabilities. The AMCA will be the fifth generation tactical deep-strike fighter aircraft.

"Once all are operational, we will have a 'buffet' spread of indigenously-built fighter aircraft, which will serve all the needs of the Indian Air Force. More importantly, they will replace the existing and ageing fleet such as the MiG 21, 27 and 29, and the deep-strike aircraft such as the Mirage-2000 and the Jaguar," he said.

### **Tejas a game changer**

"The Tejas is a game changer. While its successful development and commissioning is just one part of the success story, the main part is that the LCA programme has enabled the country to develop an ecosystem, which is on a par with any of the top aeronautical companies in the world. Today, our design systems are used in A-350 and A-380, and now we also have the infrastructure to develop the fifth and sixth generation aircraft," Dr. Harinarayana explained.

Going down the memory lane, he said the need for developing indigenously-built fighter aircraft had come, as the IAF wanted to replace the ageing second generation MiG-21 fighters.

The specifications given by the IAF were of very high standards, and they wanted to leapfrog from the second generation fighter to the fourth generation one, he added.

"The government has made its intention clear by giving the in-principle nod to an initial funding of ₹500 crore and by setting up the Aeronautical Development Agency (ADA) in 1983," he observed.

For the first time, a "problem definition" had come from the government, and we were tasked to work on it.

The success rate at that time looked to be around 1%, but that was the challenge. We decided to pool resources, as it was not possible for one agency to build a highly sophisticated fourth generation fighter, without even having the basic infrastructure, he said.

### **Team-building**

"Building a team was important, and hence we had decided to pool the best brains and resources from various agencies such as HAL, NAL, DRDO and ISRO. We had even roped in the best brains from the top IITs, who had come on a sabbatical, and there were a few who left lucrative jobs abroad to join us," Dr. Harinarayana reminisced.

"Tejas was the outcome of the cooperation between different organisations and departments, and the best minds to develop India's first fourth generation aircraft, and the elements of passion, patriotism and teamwork had synergised," said Dr. Harinarayana.

According to him, India is way ahead in systems design and digital technology, and Tejas is one of the best and sophisticated fourth generation fighter aircraft in the world that can match the standards of the Lockheed Martin F-35 Lightning.

“Digitally, we are on par, but the F-35 is more stealthier,” he added.

### **‘Drones are the future’**

Dr. Harinarayana also said that India “is now working to develop the sixth generation unmanned fighter aircraft and an Integrated Vehicle Health Management (IVHM) system. A few teams are already working on them, and very soon we will have them on the platter.”

He further said that drones would be the future, and there was a huge scope for startups in the sector.

<https://www.thehindu.com/news/national/andhra-pradesh/andhra-pradesh-india-will-soon-have-a-buffet-spread-of-indigenously-built-fighter-aircraft-to-serve-the-needs-of-iaf-says-the-man-behind-tejas/article66953839.ece>

# The Tribune

*Sun, 11 Jun 2023*

## **India, US Look to Strengthen Ties in Defence Sector Ahead of PM's Visit**

With less than a fortnight left for Prime Minister Narendra Modi’s visit to the US, both sides will seek to wrap up the negotiations on the deal to make General Electric (GE) engines in India as well as attempt to push the intentions about cooperation in cutting-edge areas into the implementation mode.

Applying a whole-of-government approach, talks are being held at various levels. The recent meeting between Principal Secretary to the PM PK Mishra with US Commerce Secretary Gina Raimondo was followed up with the India-US Strategic Trade Dialogue, which was led on the Indian side by Foreign Secretary Vinay Mohan Kwatra while the US delegation had in its ranks senior State Department official Victoria Nuland, who, during two visits to India in just over one year, had made it clear that India’s ‘60 years of entanglement with Russia’ needs to end.

The effort in all these high-level meetings, which follow up the Ajit Doval-Jake Sullivan co-chaired Initiative on Critical and Emerging Technology, will be reviewed by the two NSAs during their interaction here next week. They will seek to get clarity on the timescale for permissions from the US Government to kickstart practical collaboration in semiconductors, space, artificial intelligence, 6G, high-performance computing and quantum technologies.

As is the case with GE engines, these areas are not just restricted to defence but also have dual applications. As far as off-the-shelf purchases go, India is keen on buying US missile-enabled drones and joint manufacturing of munitions. The conversation with India on technology transfer and defence hardware is part of American interaction with several countries in the Asia Pacific region. As Ely Ratner, Assistant Secretary of Defence for Indo-Pacific Security Affairs, said the intention is to support US allies and partners in developing the capabilities to defend themselves by integrating the defence industrial bases and engaging in co-production and co-development. “One of the major thrusts is this ongoing US effort to support India’s military modernisation and the integration of our defence industrial bases, more co-production and co-development,” said Ratner

at a briefing on Friday. He also visualised India attempting similar integration with Japan, Australia, the Philippines and South Korea.

<https://www.tribuneindia.com/news/nation/india-us-look-to-strengthen-ties-in-defence-sector-ahead-of-pms-visit-516001>



*Fri, 09 Jun 2023*

## **PM Modi's U.S. Visit will Set New Benchmarks for Bilateral Ties: Pentagon**

Prime Minister Narendra Modi's visit to the U.S. in June month to set new benchmarks for bilateral ties and big announcements are likely to be made on defence industrial cooperation and boosting India's indigenous military base, the Pentagon has said.

Prime Minister Modi will embark on his first state visit to the U.S. at the invitation of President Joe Biden and First Lady Jill Biden this month. During his four-day visit starting on June 21, the U.S. president and the First Lady will host Modi for a state dinner on June 22.

“When Prime Minister Modi comes here to Washington for a State Visit later in the month, I think it will be a historic visit setting new benchmarks for the relationship,” Assistant Secretary of Defense for Indo-Pacific Security Affairs Ely Ratner said during a panel discussion at the Center for New American Security on June 8.

“I think it [the visit] will be looked back upon similar to how the Japan two plus two earlier this year was a pivotal moment in the relationship. People will be looking back on this visit by Prime Minister Modi as a real springboard for the U.S.-India relationship,” he said.

Mr. Ratner said U.S. Secretary of Defence Lloyd Austin visited India recently to advance a number of bilateral issues and prepare the ground for the Prime Minister's visit to Washington by finalising particular agreements and initiatives that the two countries are working on.

“Among the priorities are clear strategic alignment around the question of co-development and co-production between the United States and India on the defence side. This is a priority for Prime Minister Modi to strengthen India's indigenous defence industrial base, as well as advancing the military modernisation,” he said.

U.S. National Security Advisor Jake Sullivan and his Indian counterpart Ajit Doval here in January launched the initiative for critical and emerging technology (iCET) to try to bolster technology cooperation between the U.S. and India and there is a very strong defence component of that that the two countries are looking to advance.

“I know there have been efforts at this in the past. Sometimes there's skepticism around, is it going to be real this time? And my answer is, I think, all signs are pointing toward yes, it's going to be real and we're going to have some really big, historic, exciting announcements out of the Prime Minister's visit in terms of particular projects around defence industrial cooperation,” Mr. Ratner said.

“We are also enhancing our operational coordination in a number of different places. A lot of focus on the Indian Ocean, a lot of focus on the undersea domain, as well as new domains, space and cyber and new efforts around information sharing,” he said.



“If you look at the development of the U.S. - India relationship, it's really unbelievable how far the relationship has moved over the last couple of decades. That's true now more than ever,” he said.

Mr. Ratner said the two countries are seeing increasing strategic alignment.

“From our perspective, from India's perspective, we do share a vision again for a free and open Indo-Pacific. A strong U.S. -India partnership is a critical ingredient to realising that vision. That's what both sides have understood that from India's perspective and from the U.S. perspective, that a closer partnership is going to be essential to the manifestation of that vision,” he said.

The U.S. and India and several other world powers have been talking about the need to ensure a free, open and thriving Indo-Pacific in the backdrop of China's rising military manoeuvring in the region.

China claims nearly all of the disputed South China Sea, though Taiwan, the Philippines, Brunei, Malaysia and Vietnam all claim parts of it. Beijing has built artificial islands and military installations in the South China Sea.

“One of the major thrusts of the bilateral defence relationship and one of the things we were talking about, while we were in Delhi, is this ongoing U.S. effort to support India's military modernisation,” Mr. Ratner said.

“The integration of our defence industrial base is more co-production, co-development, and I think that is based upon the belief that a stronger India that can defend its own interest and its sovereignty is good for the United States,” he said.

<https://www.thehindu.com/news/international/pm-modis-us-visit-will-set-new-benchmarks-for-bilateral-ties-pentagon/article66949818.ece>



Sat, 10 Jun 2023

## **Military's Indigenisation Push Spans Basic Items, Big Systems**

*By Rahul Singh*

India's big defence indigenisation push has brought into focus how the country was thus far importing even basic items such as aircraft paint, cargo nets and slings for helicopters, anti-collision lights for fighter jets, landing lights for trainer aircraft and LED lights for warships, which now figure on a list of hundreds of military components that are being made in India, people aware of the matter said on Friday.

These are small steps on the long road to indigenisation that is being pursued by the defence ministry through a layered approach focusing on both big defence platforms and their smaller parts and components. “We can't be building fighter jets but importing aircraft grade paint or manufacturing helicopters but depending on foreign sources for cargo nets or building warships but not LED lights for flight deck applications,” said one of the officials cited above, asking not to be named. These items are among the 4,666 including replacement units, subsystems, spares and components that have been placed under a phased import ban by the defence ministry which has published four positive indigenisation lists during the last one and a half years. The fourth list of 928 items was published in May.

Of these, 2,736 items have been indigenised so far in a fresh push for self-reliance and the remaining will be manufactured in India in line with the prescribed timelines between December

2023 and December 2029. These items are used in military platforms including fighter planes, helicopters, trainer aircraft, warships, tanks, infantry combat vehicles, high-mobility trucks, defence electronics and different types of ammunition.

Other items that are now being manufactured in the country include missile approach warning sensors for helicopters, laser warning systems for armoured fighting vehicles, firefighting systems for warships, electronic warfare systems, and naval fire control systems, the officials said.

The indigenisation has been achieved by various defence public sector undertakings either through industry partners, including micro, small & medium enterprises (MSMEs), or in-house, said another official. The total import substitution value of the 2,736 items indigenised so far stands at ₹2,570 crore, according to defence ministry data.

“In India, the private sector has been making components for foreign military contractors for years. The expertise is there, and it is high time that it is tapped to power the indigenisation drive at the lower end of the spectrum, which is subsystems, spares and components, while simultaneously focusing on the big platforms. There’s immense scope to further expand the two types of positive indigenisation lists,” said Air Marshal Anil Chopra (retd), director general, Centre for Air Power Studies.

India has employed a two-pronged approach to achieve indigenisation through import bans.

One approach relates to banning the import of platforms such as fighter jets, warships, helicopters and artillery guns, while the other covers sub-systems, spares and components.

As part of the former, India has published four other lists that have imposed a phased import ban on 411 different types of weapons and platforms including light weight tanks, naval utility helicopters, artillery guns, missiles, destroyers, ship-borne cruise missiles, light combat aircraft (LCA), light transport aircraft, long-range land-attack cruise missiles, basic trainer aircraft, airborne early warning and control (AEW&C) systems, and multi-barrel rocket launchers. These platforms are expected to be indigenised during the next five to six years.

These lists were announced during the last three years --- in August 2020, May 2021, April 2022 and October 2022. Import substitution of ammunition, which is a recurring requirement, has been given special emphasis in these lists.

India has taken measures over the last four to five years to boost self-reliance in defence. Apart from a series of phased import bans, these steps include creating a separate budget for buying locally made military hardware, increasing foreign direct investment (FDI) from 49% to 74% and improving ease of doing business. India had on May 19 announced that the value of defence production in the country crossed ₹1 lakh crore for the first time on the back of key reforms to spur growth in the sector. The figure stood at ₹1,06,800 crore in FY 2022-23 compared to ₹95,000 crore in FY 2021-22 and ₹54,951 crore five years ago.

India produces a raft of weapons and systems including the LCA, different types of helicopters, warships, tanks, artillery guns, warships, missiles, rockets and a variety of military vehicles. It is eyeing a turnover of ₹1,75,000 lakh crore in defence manufacturing by 2024-25.

The country’s focus is not only on cutting dependence on imports, but also on boosting exports.

India is currently exporting military hardware to around 85 countries, with around 100 firms involved in the exports. It includes missiles, artillery guns, rockets, armoured vehicles, offshore patrol vessels, personal protective gear, a variety of radars, surveillance systems and ammunition.

India has set a defence export target of ₹35,000 crore by 2024-25.

<https://www.hindustantimes.com/india-news/indias-defence-indigenisation-push-manufacturing-military-components-in-india-to-achieve-selfreliance-101686336609878.html>

## India's Tech Blues in Making Jet Engines, Stealth Submarines

*By Parsa Venkateshwar Rao Jr*

Indigenisation of defence production is one of the pillars of the Modi government's dream of making India self-reliant or *atmanirbhar*. The general perception is that India will make things instead of importing them. In defence production, the definition is slightly tweaked. It is now seen as indigenisation if a foreign product is made in India, with an Indian collaborator.

There are two conspicuous examples of this trend. US Defence Secretary Lloyd Austin and Defence Minister Rajnath Singh have reached an understanding that US company General Electric Aerospace will produce jet engines in collaboration with Hindustan Aeronautics Limited (HAL), a public sector aerospace and defence company, for its Tejas Mark 2 medium-weight fighter (MWF). It is expected that Prime Minister Narendra Modi will sign an agreement in this regard during his state visit to Washington later this month.

The other collaboration which is being finalised is the production of stealth submarines, which run on electricity and diesel, in India. The technology will be provided by a German company, Thyssenkrupp Marine Systems, and the production partner is a public sector enterprise, Mazagon Dock Limited. The expected cost is Rs 42,000 crore.

It seems that there is an admission that India does not have the manufacturing and technological depth to fully indigenise defence production. The alternative seems to be to arrange for production in India on the basis of transfer of technology (ToT) from foreign companies. It has been argued that India has the skilled workforce to carry out the manufacturing processes of advanced technology and this will greatly bring down the costs because of the advantage of relatively lower labour cost in India. This makes good economic sense and there is not much to quarrel over it. It is estimated that India, over a period of time, will be able to absorb the technological advances and will be able to innovate on its own.

What is of interest is whether this policy is as new as it is made out to be or it is the proverbial old wine in a new bottle. Remember the famous song penned by lyricist Shailendra for Shree 420 (1955)? 'Mera joota hai Japani, ye patloon Englistani, sar pe lal topi Roosi, phir bhi dil hai Hindustani' (My shoes are Japanese, trousers are English, the red hat is Russian, yet my heart is Indian). It was his light-hearted needling of the Nehru government's Five-Year Plan, executed with multinational aid.

This was no poetic hyperbole. It worked exactly the same way on the ground. The Bhilai steel plant was set up in 1955 with Russian collaboration and the Rourkela and Durgapur steel plants were set up with German and British help in 1959. Of course, we moved on after these initial foreign collaborations. It is interesting that India's first steel plant, set up in 1907 by the Tatas in Jamshedpur, was a private sector venture.

The indigenisation of Indian defence production is likely to evolve on the same lines as that of steel production. It may, perhaps, take a decade before India can become fully self-reliant in making its own planes, submarines, tanks and guns. The indigenous fighter plane project has been evolving for 40 years now. So are the attempts to make battle tanks and rifles. But we still import assault rifles and other weapons. The argument is that there is no need to reinvent the wheel and if technology is already in place, buy it off the shelf and use it.

But advanced technology is not easily available and Indian research cannot compete with the best of the lot. The fault is not so much with the researchers, but the lack of funding from government and private sector sources.

China seems to have forged ahead because it has funded research in the past few decades not just adequately but overwhelmingly, and not just in the natural sciences but also social sciences. So, funding is the key. And governments in India still seem cash-strapped when it comes to research.

Due to the changed economic and ideological climate in Europe and North America, there is a willingness to share high technology with India because the West sees India as a partner in the confrontation with China and Russia. India naturally wants to take advantage of the situation and work with the West in becoming the manufacturing hub of western products, be it mobile phones or fighter planes. While foreign mobile phones manufactured in India are to be re-exported, the way is not yet clear for the re-export of western armaments made in India.

The question remains whether the new model of defence production in India with western collaborators will help the country stand on its own legs and not depend on others for its security preparedness. The answer is that this could be of some help and that it is an improved state of affairs than in the recent past. But India has not yet solved its problem of meeting its defence needs from its own financial and technological resources. While the government can make claims that the new policy of indigenisation of defence production is working wonders, the truth is that we are far from the stated goal. There is no harm in accepting the fact that we still need the US and Germany to work with us in the field of advanced technology.

Policymakers are not yet sure of how India can achieve technological parity with global leaders because they want instant success. It does not work that way in technology. And, more importantly, technology does not happen without high science. It was at the 1995 Indian Science Congress in Kolkata that the then Director General of the Council of Scientific and Industrial Research, RN Mashelkar, declared loud and clear that there was no high technology without high science.

Indian politicians and bureaucrats refuse to accept the truth of Mashelkar's simple statement. And this is the issue at the heart of indigenisation of defence production in India.

<https://www.tribuneindia.com/news/comment/indias-tech-blues-in-making-jet-engines-stealth-submarines-515721>

# The Tribune

Sat, 10 Jun 2023

## Plug R&D Gaps to Make the Most of US Cooperation

*By C Uday Bhaskar*

The India-US bilateral relationship is all set to be infused with summit-level political attention and policy deliberations during Prime Minister Narendra Modi's June 21-24 state visit to the US. The agenda includes a ceremonial welcome at the White House by US President Joe Biden and an address by PM Modi to a joint session of the US Congress. Such protocols have a symbolism that is indicative of the priority being accorded by the US to the country and the individual leader being hosted.

Defence cooperation is one of the major aspects of this visit. Considerable preparatory work has been done by the ministers and senior officials concerned in the run-up to the Modi visit. US Defence Secretary Lloyd Austin was received by Defence Minister Rajnath Singh in Delhi on June 5. They focused on ramping up defence industrial cooperation between the two nations. Both sides

agreed to ‘identify opportunities for co-development of new technologies and co-production of existing and new systems and facilitate increased collaboration between defence startup ecosystems of the two countries’.

The two also welcomed the recent launch of new initiatives — the Advanced Domains Defence Dialogue committed to expanding the scope of bilateral defence cooperation to encompass all domains, and the India-US Defence Acceleration Ecosystem (INDUS-X) to advance cutting-edge technology cooperation.

Concurrently, Indian Foreign Secretary Vinay Mohan Kwatra was in Washington on June 6 for the inaugural session of the India-US Strategic Trade Dialogue. The objective was identified as facilitating the ‘development and trade of critical technology domains’. These include semiconductors, space, telecom, quantum, AI, defence, biotech and others. The technology spectrum, evidently, is expansive.

One of the high-visibility items on the agenda is the US-made GE F-414 jet engine. It is expected that a deal would be reached, whereby India would be able to co-develop this engine. This would be a significant boost to the Indian indigenous effort in fighter aircraft production, which has been handicapped by the lack of such capability. Furthermore, US National Security Adviser Jake Sullivan is expected to arrive in Delhi on June 13 for a two-day visit to fine-tune the tangible outcomes of the Modi visit with a focus on the jet engine and high-tech cooperation.

However, more than such conventional military platforms, the real challenge for India will be to partner with the US and leapfrog into the new technology domains that will shape warfare in the near future. Broadly summarised, this new domain spans space, underwater, cyber and spectrum with artificial intelligence (AI).

Is India in a position to partner with the US effectively and absorb the necessary knowledge and skill sets required to give atmanirbharta (self-reliance) in the new technology domains a meaningful fillip? This is where the word ‘ecosystem’ comes into focus, and on current evidence, it would appear that due to structural deficiencies and systemic inadequacies, India does not have the requisite ecosystem bandwidth to meaningfully engage with the US so as to boost the indigenous effort — the ultimate objective.

Proven competence in new cutting-edge technologies is predicated on a large knowledge pool and sustained investment in R&D. The US is the acknowledged global leader in R&D and technological innovation; China stands second, and is determined to occupy the first position in the coming decade. One instructive indicator is the number of papers published in peer-reviewed papers in science and engineering; in 2020, China had overtaken the US with 6,69,000 papers, while the US had 4,56,000 to its credit. India was at the third spot with 1,49,000 papers.

The most glaring asymmetry for India is in R&D investment, which is the foundation for a robust design and manufacturing ecosystem. India is estimated to spend 0.7 per cent of its GDP on R&D, far less than the US 2.8 (per cent), China (2.1 per cent), Israel 4.3 (per cent ) and South Korea 4.6 (per cent).

While the Defence Research and Development Organisation (DRDO) is the primary state-funded entity to nurture R&D in the defence sector, it is burdened by public-sector constraints and modest funding. The Indian corporate sector also treats R&D in an indifferent manner and in a compelling review, Naushad Forbes has provided a revealing pen picture of the arid Indian landscape.

Comparing the five most profitable firms across five nations (2021), the review notes that the total R&D spending was: the US, \$152 billion; China, \$31 billion; Japan, \$37 billion; Germany, \$53 billion; and India, \$0.9 billion. Total profits ranged from \$410 billion for the US to \$43 billion for India. The R&D spending by these firms as a portion of the profit was — the US, 37 per cent;

China, 29 per cent; Japan, 43 per cent; Germany, 55 per cent; and India, 2 per cent. The deduction is self-evident — sustained investment in R&D is a prerequisite for domain innovation and commercial benefit in the long run.

Thus, India will have to nurture an ecosystem that is R&D-friendly across the board. This will iron out another structural constraint related to education that is hobbling the current indigenisation effort. The pace of technological change and knowledge expansion is dizzying and this is being driven by a young demographic profile across the world in leading centres of higher education.

The grim reality in India today is that education has become a handmaiden of politics, and even more so in the centres of higher education and excellence. Academic excellence is being trumped by loyalty to sectarian ideology and political compulsions, thereby stifling the true spirit of seeking knowledge.

An enabling ecosystem that will allow for a meaningful cooperation with the US in high-tech sectors cannot be nurtured with the existing structural constraints in R&D funding and higher education. This alas, is the unalloyed reality.

<https://www.tribuneindia.com/news/comment/plug-rd-gaps-to-make-the-most-of-us-cooperation-515718>

**R. REPUBLICWORLD.COM**

*Fri, 09 Jun 2023*

## **Cash-Strapped Pakistan Hikes Defence Spending and Allocates Rs 1.8 Trillion for Defence in Budget 2023-24**

Cash-strapped Pakistan on Friday hiked defence spending by 15.5 per cent and allocated over Rs 1.8 trillion, as the government unveiled a Rs 14.4 trillion budget for 2023-24 as it battled to fend off a looming default due to shrinking foreign reserves.

Finance Minister Ishaq Dar, who presented the budget in the National Assembly, the lower house of parliament, said the government will target a growth rate of 3.5 per cent in the coming fiscal year.

“This budget should not be seen as an ‘election budget’ – it should be seen as a ‘responsible budget’,” Dar said as the political parties were getting ready for the next general elections scheduled for later this year, amidst political turmoil following the ouster Imran Khan as the prime minister in April last year.

Dar presented the budget in the National Assembly, the lower house of parliament, which is being deemed as the last budget of the government before the general elections later this year.

He said that a sum of Rs 1,804 billion has been proposed for defence, which is higher than Rs 1.523 billion allocated last year. The defence expenditure is 15.5 per cent higher than last year, making up about 1.7 per cent of the Gross Domestic Product (GDP).

The defence sector expenses are the second biggest component of the annual expenditure after the debt payments, which for the next year would be Rs 7,303 billion and is the biggest single expense of the country.

The minister declared a 3.5 per cent GDP growth target for the next year, which is a moderate target. “This budget should be treated as a development-oriented budget instead of an election budget,” he said.

He said that the inflation target for the next fiscal year would be 21 per cent while the budget deficit would be 6.54 per cent of the GDP. He said that the export target would be Rs 30 billion and the target of remittances would be Rs 33 billion.

The minister said that the tax collection target would be Rs 9,200 billion, out of which Rs 5,276 billion would be provided to the provinces under an already agreed formula.

He said the non-tax revenue target of the government would be Rs 2,963 billion and with this, the net income of the federal government would be Rs 6,887 billion.

He said the net expenditure would be Rs 14,460 billion and the deficit of Rs 7,573 billion would be bridged through external financing.

He said the Rs 714 billion would be spent on civil administration and another Rs 761 billion for a pension of retired civil and defence employees. The government also decided to set up a pension fund to meet the increasing pension expenses.

The government also decided to provide a historic Rs 1,150 billion Public Sector Development Program (PSDP) and the provincial volume of the development budget will be Rs 1,569 billion, taking the net volume of the development spending to over Rs 2,700 billion. He said the government decided to allocate Rs 2,200 billion for agri loans and Rs 30 billion for the solarisation of water pumps. He also announced other measures to increase the per-acre yield of various crops.

The minister also unveiled several steps to increase IT exports and enable freelancers to boost the IT sector. He also declared that the IT sector will be treated as a Small and Medium size industry and will get access to better tax regimes.

He also offered incentives for overseas Pakistanis to send more money to the country as the government set a USD 33 billion target for foreign remittances.

The government also announced major relief for government employees by increasing the 30-35 per cent increase in salaries.

Earlier, he lashed out at the previous government of Khan for “laying economic landmines” for the next government by destroying the economy of the country.

“The former Pakistan Tehreek-e-Insaf government is responsible for the current difficulties faced by the common people,” he said. The new budget comes as the chances for revival of a stalled International Monetary Fund (IMF) are fading fast, as the USD 6.5 billion assistance package agreed in 2019 is set to end on June 30. The fund has insisted that the government should meet tough conditions before releasing USD 1.1 billion.

There is growing consensus among the experts that without a revival of the IMF programme or a new bailout package in the next fiscal year, Pakistan will find it almost impossible to ward off default.

Prime Minister Shehbaz Sharif is still hopeful that the donor will release the expected tranche of the existing loan and enable the country to get access to different multilateral and bilateral loans.

The economic situation has never been so grim in a country which since independence has thrice seen military coups and the ouster of elected governments.

Cash-strapped Pakistan’s economy has been in a free fall mode for the last many years, bringing untold pressure on the poor masses in the form of unchecked inflation, making it almost impossible for a vast number of people to make ends meet. Their woes increased manyfold after last year’s catastrophic floods that killed more than 1,700 people and caused massive economic losses.

<https://www.republicworld.com/world-news/pakistan-news/cash-strapped-pakistan-hikes-defence-spending-and-allocates-rs-1-dot-8-trillion-for-defence-in-budget-2023-24-articleshow.html>

## Japan Keeps Missile Defence Alert after North Korea Deadline Expires

Japan extended its alert on ballistic missile defences on Sunday despite the expiration of North Korea's deadline for launching a satellite had passed.

Japan put its ballistic missile defences on alert last month and vowed to shoot down any projectile it deemed to threaten its territory, after North Korea notified Japan it planned to launch a satellite between May 31 and midnight on Saturday night.

"Japan will keep its order regarding the ballistic missile defences for the time being," the Ministry of Defense said in a brief statement that did not provide a reason.

North Korea last month informed the International Maritime Organization of the schedule of its planned satellite launch.

North Korean launched a satellite on May 31 that ended in failure, sending the booster and payload plunging into the sea, according to North Korean state media.

<https://timesofindia.indiatimes.com/world/rest-of-world/japan-keeps-missile-defence-alert-after-north-korea-deadline-expires/articleshow/100911125.cms>



## Germany Defence Ministry Concerned over Ex-pilots Sharing Secrets with China: Report

The German Defence Ministry has expressed concern that its retired air force pilots, lured by private training contracts, are sharing their unique skills with China, reported Deutsche Welle (DW). China and Germany have previously participated in official military training programmes, the report noted, adding that military organisations frequently share their technical and tactical expertise. However, it is uncommon for retired army people to share their specialised skills with the commercial sector.

But these norms are now being examined more closely when it comes to China. The same was recently demonstrated by the strong response in Germany to a report, shedding light on a routine practice: According to the publication, Spiegel and the public broadcaster ZDF, as cited by DW, a "handful" of retired German air force pilots have relocated to China on highly lucrative private training contracts, as per DW.

DW is Germany's international broadcaster which provides news and information. German Defence Minister, Boris Pistorius, was attending a high-level defence summit in Singapore when the story broke. He told his Chinese counterpart, Li Shangfu, that he expected "this practice to be stopped immediately." This development came at the time when the German government, at the request of the United States, reevaluated its economic and strategic relationship with China, the report said.



Marcus Faber, a lawmaker who sits on the parliamentary defence committee, told DW in a statement, "The (defence) ministry must now do everything possible to end this practice. The rules for people who, due to their world for the German state, have access to security-relevant information need to be urgently tightened."

There are no legal violations inherent in the work. However, because of the legal grey zone, the German government has little power to halt this form of knowledge transfer, the report noted.

However, a representative for the German defence ministry told DW that short of a clear case of disclosing state secrets, former military personnel and other government employees are generally free to exploit their skills. They are liable for "retroactive service obligations", the statement said. In accordance with that, they must disclose their job and "maintain secrecy about matters that he or she became aware of". The ministry then does a "conflict of interest check" and has the right to reject an application if it uncovers any.

The ministry has voiced concern about the fact that Chinese pilots are being taught the fundamentals of flying, including information on NATO operational strategies. But it's not clear if doing that would violate the confidentiality agreement.

The South African school, TFASA, which was mentioned in the Spiegel investigation, denied endangering the national security of any nation in a statement to DW.

A London-based communications consultancy representing TFASA said, "All training aspects and material are strictly unclassified, and provided either from open source or the clients themselves."

According to analysts of the People's Liberation Army (PLA), China's armed force, the practice of using veteran NATO pilots to teach Chinese airmen may go back almost a decade. That was long before the US national security policy referred to China as the "only competitor" with the ability and intention to "reshape the international order" and the European Union labelled China as a "systemic rival."

But China has a long history of successfully using foreign know-how to accelerate its domestic prowess. Western advances in academia and research, industry, technology, and intellectual property have all found their way into Chinese equivalents, the report noted, adding that it is not a big leap to apply these efforts to the defence sector.

Tzu-Yun Su, a research fellow at the Institute for National Defence and Security Research (INDSR) in Taiwan, told DW, "For the PLA, working with retired Western pilots allows them to refine their doctrine, and it's essentially stealing secrets of Western countries' military exercises."

<https://www.hindustantimes.com/world-news/germany-defence-ministry-concerned-over-ex-pilots-sharing-secrets-with-china-report-101686312229924.html>

## THE ECONOMIC TIMES

*Fri, 09 Jun 2023*

### **Russia Says Military Ties with China Provide Global 'Stability'**

Russian armed forces chief of staff Valery Gerasimov said on Friday his country's strong military partnership with China provides stability around the world.

Gerasimov, who is commander of Russia's military operations in Ukraine, made the remark during a videoconference with his Chinese counterpart, Liu Zhenli.

"The coordination of Russian and Chinese efforts on the international stage has a stabilising effect on the global situation," Gerasimov told Liu, according to a video published by the Russian defence ministry.

"I am convinced today's meetings will help us continue to strengthen the strategic Russia-China defence partnership," he added.

Joint Russian and Chinese military exercises should remain "an important axis" of this partnership, he continued.

Gerasimov extended an invitation to visit Moscow to Liu, who was appointed last September as chief of staff of the Joint Staff Department of China's Central Military Commission.

China and Russia are strategic allies, with both sides frequently touting their "no limits" partnership and cooperation in the economic and military spheres.

Their ties became even closer after Russia began its military campaign in Ukraine in February 2022 and the western economic sanctions that ensued.

Beijing has pointedly declined to condemn Russia's offensive against its neighbour.

Chinese President Xi Jinping visited Moscow in March and declared relations between the two countries were entering a new era.

<https://economictimes.indiatimes.com/news/defence/russia-says-military-ties-with-china-provide-global-stability/printarticle/100880614.cms>

## THE ECONOMIC TIMES

*Sun, 11 Jun 2023*

### **US Confirms China has had a Spy Base in Cuba since at least 2019**

China has been operating a spy base in Cuba since at least 2019, part of a global effort by Beijing to upgrade its intelligence-gathering capabilities, according to a Biden administration official. The official, who was not authorised to comment publicly and spoke on the condition of anonymity, said the US intelligence community has been aware of China's spying from Cuba and a larger effort to set up intelligence-gathering operations around the globe for some time.

The Biden administration has stepped up efforts to thwart the Chinese push to expand its spying operations and believes it has made some progress through diplomacy and other unspecified action, according to the official, who was familiar with US intelligence on the matter.

The existence of the Chinese spy base was confirmed after The Wall Street Journal reported on Thursday that China and Cuba had reached an agreement in principle to build an electronic eavesdropping station on the island.

The Journal reported China planned to pay a cash-strapped Cuba billions of dollars as part of the negotiations.

The White House called the report inaccurate.

"I've seen that press report, it's not accurate," White House National Security Council spokesman John Kirby said in an MSNBC interview Thursday. "What I can tell you is that we have been concerned since day one of this administration about China's influence activities around the world; certainly in this hemisphere and in this region, we're watching this very, very closely."

The US intelligence community had determined Chinese spying from Cuba has been an "ongoing" matter and is "not a new development," the administration official said.

Cuban Deputy Foreign Minister Carlos Fernandez de Cossio also refuted the report in a Twitter post Saturday.

"The slanderous speculation continues, evidently promoted by certain media to cause harm and alarm without observing minimum patterns of communication and without providing data or evidence to support what they disseminate," he wrote.

President Joe Biden's national security team was briefed by the intelligence community soon after he took office in January 2021 about a number of sensitive Chinese efforts around the globe where Beijing was weighing expanding logistics, basing and collection infrastructure as part of the People's Liberation Army's attempt to further its influence, the official said.

Chinese officials looked at sites spanning the Atlantic Ocean, Latin America, the Middle East, Central Asia, Africa and the Indo-Pacific. The effort included looking at existing collection facilities in Cuba, and China conducted an upgrade of its spying operation on the island in 2019, the official said.

Tensions between the US and China have been fraught throughout Biden's term.

The relationship may have hit a nadir last year after then-House Speaker Nancy Pelosi's visit to democratically governed Taiwan.

That visit, the first by a sitting House speaker since Newt Gingrich in 1997, led China, which claims the island as its territory, to launch military exercises around Taiwan.

U.S.-China relations became further strained early this year after the US shot down a Chinese spy balloon that had crossed the United States.

Beijing also was angered by Taiwan President Tsai Ing-wen's stopover in the US last month that included an encounter with House Speaker Kevin McCarthy.

The speaker hosted the Taiwanese leader at the Ronald Reagan Presidential Library in southern California.

Still, the White House has been eager to resume high-level communications between the two sides.

Secretary of State Antony Blinken is planning to travel to China next week, a trip that was cancelled as the balloon was flying over the US. Blinken expects to be in Beijing on June 18 for meetings with senior Chinese officials, according to US officials, who spoke Friday on condition of anonymity because neither the State Department nor the Chinese foreign ministry has yet confirmed the trip.

CIA Director William Burns met in Beijing with his counterpart last month.

White House national security adviser Jake Sullivan met with his Chinese counterpart in Vienna over two days in May and made clear that the administration wanted to improve high-level communications with the Chinese side.

Defence Secretary Lloyd Austin recently spoke briefly with Li Shangfu, China's minister of national defense, at the opening dinner of a security forum in Singapore. China had earlier rejected Austin's request for a meeting on the sidelines of the forum.

<https://economictimes.indiatimes.com/news/defence/us-confirms-china-has-had-a-spy-base-in-cuba-since-at-least-2019/articleshow/100910357.cms>

### **Kochi Start-up Forays into Space with Rocketry and Satellite Development**

Launching a customised satellite aboard a rocket propelled by a helium or hydrogen-powered balloon may sound too big an ambition for a budding start-up.

iHub Robotics, a Kochi-based start-up dedicated to the research and development of various robotics-based products, however, is dreaming no less, as it strives toward developing a prototype of the rocket by this December. The start-up aims at achieving this goal under its subsidiary I Aero Sky India, claimed to be Kerala's first aerospace start-up.

“Compared to conventional rocketry, which is very costly, we would follow a semi-rocket technology bringing down the cost to a fraction. It would also replace burning of chemical fuel by a helium or hydrogen-powered balloon equipped with a permanent propelling system, a heat compression unit and sensors to detect and control the pressure and temperature build-up causing the balloon to burst. It would be a perfect vehicle for launching commercial, specific-purpose satellite with a payload not exceeding 100kg in the low orbit,” said Athil Krishna, one of the three founders and CEO of iHub Robotics.

#### **Unveiling of Nambi Sat**

While developing the rocket remains a goal in the immediate future, the unveiling of the already developed Nambi Sat, a communication satellite, will mark the launch of I Aero Sky India by Minister P. Rajeeve on Saturday. The satellite has been named after the former Indian Space Research Organisation (ISRO) scientist S. Nambi Narayanan.

I Aero Sky India has been registered with the Indian National Space Promotion and Authorisation Centre (IN-SPACe), an autonomous agency in the Department of Science.

“Nambi Sat marks our foray into the commercial satellite making market with immense potential. We have approached the ISRO for technical support for its launch. The low orbit satellite can be used for collecting Kerala-specific data with particular significance to disaster management,” said Mr. Krishna. The data from the satellite will be transmitted to a ground station where it would be processed round the clock and fed it into an artificial intelligence-driven system. The system, capable of comparing the data with previous data, would throw up accurate predictions and timely alerts. A more advanced version of the Nambi Sat powered by hyper spectral imaging system would be developed in the next phase. The start-up has made a proposal to the State government for using this advanced satellite for disaster management.

Three more robotic products developed by iHub Robotics would be launched by the Minister on Saturday. These include a Restaurant Robot for deployment in hotels and even health-care institutions; Scara, a low-cost robotic arm for industrial purpose; and Spot, a dog robot that can be deployed for defence purposes and hazardous industries.

<https://www.thehindu.com/news/national/kerala/kochi-start-up-forays-into-space-with-rocketry-and-satellite-development/article66950287.ece>

## **IIT-Madras Generates Hydrogen from Seawater using Solar Energy**

Researchers from the Department of Physics at IIT-Madras have developed critical components for a highly efficient, cost-effective way to electrolyze seawater to generate hydrogen. The results were published in the journal ACS Applied Energy Materials.

State-of-the-art alkaline water electrolyser technology is energy-intensive, requires an expensive oxide-polymer separator, and uses fresh water for electrolysis. The IIT-Madras team led by Dr. Ramaprabhu Sundara has addressed each of these challenges by developing simple, scalable and cost-effective alternatives that are highly efficient in splitting seawater and generating hydrogen.

In place of pure or fresh water, the team has developed an electrolyser using alkaline seawater. They used a carbon-based support material for the electrodes instead of metals to almost eliminate the possibility of corrosion. They also designed and developed transition metal-based catalysts that can catalyse both oxygen and hydrogen evolution reactions. The catalyst enhances the production of both hydrogen and oxygen even when impurities and chemical deposition on one of the electrodes takes place. Also, the researchers have developed a cellulose-based separator that is very economical and serves the purpose of allowing hydroxide ions to pass through but prevents oxygen and hydrogen that are generated from crossing-over. Finally, the researchers have optimised all the parameters such that the water electrolyser can directly use photovoltaic-derived voltage to split seawater and generate green hydrogen and oxygen, oxygen can be used elsewhere.

### **The reactions**

Alkaline water electrolyser consists of two half-reactions occurring at the anode and cathode. At the cathode, water dissociates into  $H^+$  and hydroxide ions, and the  $H^+$  ions get converted into hydrogen. The hydroxide ions produced at the cathode permeate through the separator and oxygen is generated at the anode.

When seawater is used for electrolysis, hypochlorite formation occurs at the anode. Hypochlorite is responsible for corrosion of the electrode support material, and competes with the oxygen evolution reaction thus reducing the amount of oxygen produced. At the cathode, the hydrogen evolution reaction is slowed down when several impurities get adsorbed on the electrode surface.

The electrodes have a support material that is coated with a catalyst. “Since conventional metal support materials get easily corroded when seawater is used, we developed a carbon-based support material,” says Prof. Sundara. “The support material is used in both the anode and cathode, and is coated with the catalyst. The catalyst allows enhanced and simultaneous production of hydrogen at the cathode and oxygen at the anode.”

According to Prof. Sundara, the transition bimetals present in the catalyst are more selective towards oxygen evolution reaction than hypochlorite formation. Thus the challenge of hypochlorite formation reducing oxygen production is taken care of. Similarly, even while the cathode continues to adsorb impurities, the catalyst promotes the hydrogen evolution reaction, which helps in the increased production of hydrogen.

### **The separator**

Another unique feature is the novel separator that has been developed by the team. When alkaline electrolyte is used, the anode and cathode are separated with a separator. Since zirconium oxide-

based material that is routinely used is expensive, they came up with a cellulose-based separator which allows the hydroxide ions to pass through from the cathode to the anode. But it minimises the crossover of hydrogen and oxygen that is generated.

“We found our separator is highly resistant to seawater degradation,” says Sana Fathima, one of the co-authors of the paper.

“Using the assembled electrolyser, we have demonstrated an overall seawater splitting voltage of 1.73 V at 10 mA/sq.cm (a benchmark current density corresponding to about 12% efficient solar-to-fuel conversion device under 1 sun illumination) at 26 degrees C,” says Anamika Ghosh from IIT Madras and the first author of the paper. “We have optimised all the parameters such that the water electrolyser can directly use photovoltaic-derived voltage and work at 10mA/sq.cm current density to split seawater for green hydrogen production.”

The team has developed two prototypes of different dimensions to assess the viability of the catalysts. “In the case of the smaller electrolyser (16 sq.cm dimension) hydrogen is produced at a rate of 250 ml per hour, while in the larger one (391 sq.cm dimension) hydrogen is produced at a rate of about one litre per hour at an applied voltage of 2 V,” Ms. Ghosh says. “We also fabricated a stack consisting of three such cells and hydrogen produced is about four litres per hour at an applied voltage of 2 V per cell.” All the measurements were done at ambient pressure and room temperature.

“All the cells have shown a shelf-life of more than six months, and the study is continuing,” says Ms. Fathima.

<https://www.thehindu.com/sci-tech/science/iit-madras-generates-hydrogen-from-seawater-using-solar-energy/article66951534.ece>

## THE TIMES OF INDIA

Mon, 12 Jun 2023

### Why Depleting Snow Cover may Affect Areas on Plains

An ongoing study by a research think-tank says that in the past five decades, the snow cover in the higher altitudes of Uttarakhand — 3,000 metres and above — has reduced, which will have an impact on the flow of rivers downstream, including in Delhi-NCR.

A previous study, High Altitude Phytodiversity and Impacts of Climate Variability at Ecosystem and Species Level in Garhwal Himalaya (Uttarakhand) using Geospatial Techniques, funded by the central science and technology department, was based on the decadal data from 1972 to 2013 using Landsat satellite images.

The ongoing study, in continuation of the previous one, is capturing the intra annual variability in snow and vegetation covers from 1972 to 2023 and its impact on National Capital Region.

Yogita Shukla, founder and CEO of think-tank addGEO Foundation who shared the initial findings of her research at the 10th edition of ‘dialogue to develop a vision for the environment of Delhi-2025’, said on Monday, “Nature is connected and what happens upstream, it impacts downstream. Any climatic disturbance happening in high altitude will impact Delhi-NCR as the aerial distance is not much between them. Both the Ganga and the Yamuna that feed NCR start from the high altitude of Uttarakhand. Hence, any impact on snow cover will have an impact on the flow of rivers downstream.”

The study states that the maximum snow cover in the higher altitude of Uttarakhand region was 14,423.6 square kilometres in 1973, but it saw a reduction of 34.7% in 2013 at 9,413.2 sqkm.

Similarly, the minimum snow cover saw a reduction of 59.3% as the area decreased from 10,417.8 sqkm in 1973 to 4,250.5 in 2013. “These observations are taken at a point in one decade, and there have been intermittent increases in snow cover in some years in between. However, the overall trend is drastic reduction in snow cover,” said Shukla.

The weather pattern, she said, has become erratic in Delhi-NCR. “We used to have a cycle of seasons like two-three months each for monsoon and winter. However, winter has now become short and intense. We now witness summer with high temperatures, leading to local convection causing rain. This summer, rain also happened due to western disturbances and moisture from Arabian Sea,” said Shukla. Climate change is causing extreme events and high inter annual variability, she added.

According to the study, the decrease in the minimum snow cover over from 1972 to 2013 has resulted in the appearance of certain vegetation types in very high altitude areas that had remained under the snow for several decades. “Since 1990, the disappearance of snow provided good conditions for vegetation underneath to bloom in full growth and has led to the spread of alpine and sub-alpine vegetation earlier covered under the snow,” it says.

<https://timesofindia.indiatimes.com/city/delhi/why-depleting-snow-cover-may-affect-areas-on-plains/articleshow/100921351.cms>

## THE TIMES OF INDIA

Mon, 12 Jun 2023

### **IIT-Incubated Firm to Launch 1st Multi-Sensor Earth Observation Satellite**

An IIT-Madras-incubated space-tech startup, GalaxEye, is building the world's first multi-sensor earth observation satellite with the help of a visible spectrum camera providing synchronised imaging that can take multiple images at the same time. The startup is going to launch its first satellite, 'Drishti Mission' next year.

Founded in 2020 by Suyash Singh, Denil Chawda, Kishan Thakkar, Pranit Mehta, Rakshit Bhatt and professor SR Chakravarthy, GalaxEye is working on deploying a satellite constellation with a first-of-its-kind sensor based on data fusion to provide the most comprehensive imagery dataset from space. The data fusion technology developed in-house will bring unparalleled insights and data from space, enabling satellite constellations to perform all-weather imaging at all times without atmospheric interference typical of today's single-sensor satellites. The technology will enable the production of images with extremely high resolution via a small satellite constellation that, once fully operational, will provide global coverage in under 12 hours, according to a statement from GalaxEye.

Speaking to TOI, GalaxEye founding member and vice-president Pranit Mehta said, "The first launch is a very important milestone to us. It would put to space India's first and the world's highest resolution multi-sensor imaging satellite. Given the strong value of all-time all-weather imaging, our objective is to boost the EO industry and unlock several new applications across domains like insurance, maritime, supply chain and more."

<https://timesofindia.indiatimes.com/india/iit-incubated-firm-to-launch-1st-multi-sensor-earth-observation-satellite/articleshow/100921719.cms>

