

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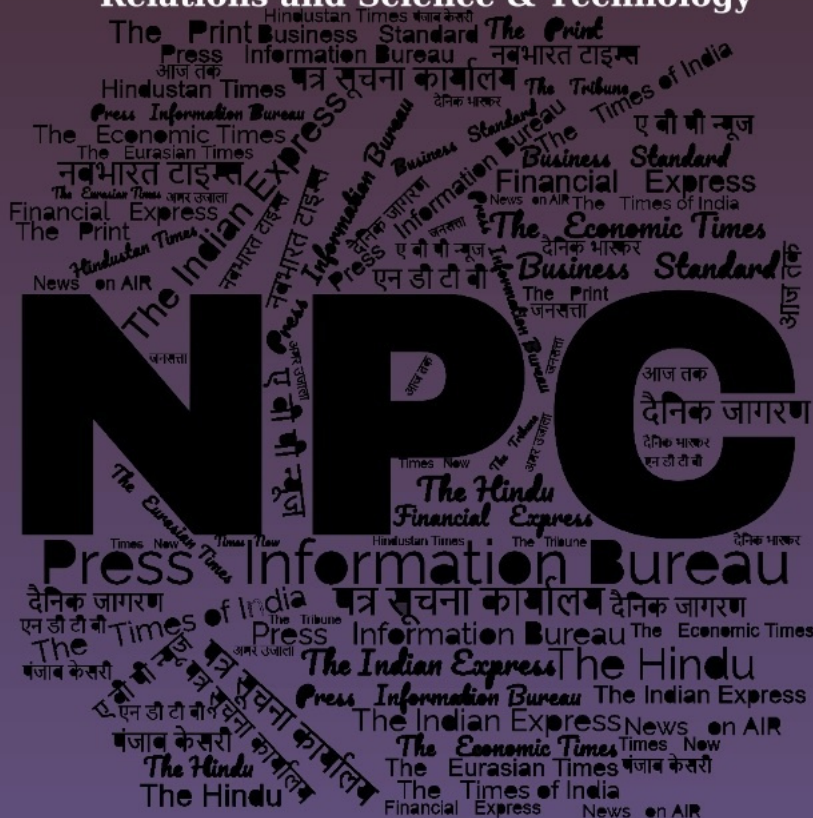
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डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



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DRDO News

भारत ने स्वदेशी ड्रोन से दागी गाइडेड मिसाइल, यूएलपीजीएम-वी3 का किया सफल परीक्षण

Source: Dainik Jagran, Dt. 26 Jul 2025

नई दिल्ली, प्रेटर : भारत दुश्मनों पर ड्रोन से ही कहर नहीं ढाएगा, बल्कि ड्रोन से मिसाइल दागकर उन्हें नेस्तनाबूद भी कर सकेगा। रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) ने आंध्र प्रदेश के परीक्षण रेंज में ड्रोन से दागी जाने वाली गाइडेड मिसाइल का सफल उड़ान परीक्षण किया है। रक्षा क्षेत्र में आत्मनिर्भरता की दिशा में यह एक और बड़ी उपलब्धि है। यह क्षमता दुनिया के चुनिंदा देशों के पास ही है। ड्रोन से मिसाइल दागकर दुश्मन के क्षेत्र में अधिक अंदर तक घुसकर उन्हें सबक सिखाया जा सकेगा।

रक्षा मंत्री राजनाथ सिंह ने शुक्रवार को एक्स पर पोस्ट किया, भारत की रक्षा क्षमताओं को बढ़ावा देते हुए डीआरडीओ ने आंध्र प्रदेश के कुरनूल के नेशनल ओपन एरिया रेंज (एनओएआर), परीक्षण रेंज में यूएवी लांच्ड प्रिसिजन गाइडेड मिसाइल (यूएलपीजीएम) -वी3 के उड़ान परीक्षणों को सफलतापूर्वक अंजाम दिया है। यूएलपीजीएम-वी3 प्रणाली के विकास और सफल परीक्षणों के लिए डीआरडीओ और उद्योग भागीदारों, एमएसएमई और स्टार्टअप्स को बधाई।

यूएलपीजीएम-वी3 डीआरडीओ द्वारा पहले विकसित यूएलपीजीएम-वी2 मिसाइल का उन्नत संस्करण है। यूएलपीजीएम-वी3 उन्नत दोहरे चैनल सीकर से लैस है। यह विभिन्न प्रकार के लक्ष्यों पर प्रहार कर सकता है। रक्षा मंत्रालय के

● डीआरडीओ ने किया परीक्षण, कई लक्ष्यों पर प्रहार करने में सक्षम

● रक्षा मंत्री राजनाथ सिंह ने इसे भारत की बड़ी उपलब्धि बताया



आंध्र प्रदेश की परीक्षण रेंज में डीआरडीओ द्वारा किए गए परीक्षण के दौरान मिसाइल दागता स्वदेशी ड्रोन ● प्रेटर

अनुसार, यह मिसाइल रात में भी हमला करने में सक्षम है। दागे जाने के बाद लक्ष्य को अपडेट करने के लिए इसमें दो-तरफा डाटा लिंक भी है। आधुनिक युग के बख्तरबंद वाहनों को नष्ट करने वाले एंटी-आर्मर, रोल्ड होमोजीनियस आर्मर के साथ ही यह मिसाइल तीन माइयूलर वारहेड से लैस है। यह मिसाइल ड्रोन से दागी गई, जिसे भारतीय स्टार्ट-अप - न्यूस्पेस रिसर्च टेक्नोलाजीज, बेंगलुरु ने स्वदेशी रूप से विकसित किया है।

डीआरडीओ अन्य भारतीय कंपनियों के लंबी दूरी और उच्च

क्षमता वाले यूएवी के साथ यूएलपीजीएम हथियारों के एकीकरण पर काम कर रहा है। अदाणी डिफेंस, भारत डायनेमिक्स लिमिटेड और 30 एमएसएमई और स्टार्ट-अप ने इस परियोजना को सफल बनाने में योगदान दिया है।

फायर कंट्रोल रडार खरीदने के लिए अनुबंध पर हस्ताक्षर: सेना के लिए वायु रक्षा फायर कंट्रोल रडार की खरीद के लिए रक्षा मंत्रालय ने शुक्रवार को भारत इलेक्ट्रॉनिक्स लिमिटेड (बीईएल) के साथ दो हजार करोड़ रुपये के अनुबंध पर हस्ताक्षर किए।

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DRDO tests missile fired from drone

Source: The Times of India, Dt. 26 Jul 2025

Flight-trials of an advanced precision guided missile launched from an Unmanned Aerial Vehicle (UAV), which can be fired in plain and high-altitude areas during day and night, have been successfully conducted by DRDO.



The UAV-launched precision guided missile or ULPGM-V3, which is an enhanced version of the ULPGM-V2 missile developed and delivered by DRDO earlier, was tested at the National Open Area Range at Kurnool in Andhra Pradesh.

"The ULPGM-V3 is equipped with a high-definition dual-channel seeker that can strike a wide variety of targets. It has a two-way data link to support post-launch target/aim-point update," an official said on Friday.

The missile is equipped with three modular warhead options, including an anti-armour one against modern tanks and infantry combat vehicles equipped with rolled homogeneous armour with explosive reactive armour.

The other two are a penetration-cum-blast warhead with bunker-bursting capabilities and a re-fragmentation warhead with "a high lethality zone". Calling it "a major boost" to India's defence capabilities, defence minister Rajnath Singh congratulated DRDO and its industry partners, MSMEs and start-ups for the development and successful trials of the ULPGM-V3 system.

"This success proves that the Indian industry is now ready to absorb and produce critical defence technologies," he added.

The missile is jointly developed by the DRDO labs like the Research Centre Imarat, Defence Research and Development Laboratory, Terminal Ballistics Research Laboratory, High-Energy Materials Research Laboratory, Integrated Test Range and Defence Electronics Research Laboratory.

The UAV, in turn, has been indigenously developed by start-up Newspace Research Technologies, Bengaluru.

"DRDO is actively pursuing integration of ULPGM weapons with long-range and high endurance UAVs from several other Indian companies," the official said.

<https://timesofindia.indiatimes.com/india/drdo-tests-missile-fired-from-drone/articleshow/122914242.cms>

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Defence News

सेना की रुद्र ब्रिगेड बनेगी दुश्मन का काल और कहर ढाएंगे भैरव कमांडो

Source: Dainik Jagran, Dt. 27 Jul 2025

राज्य ब्यूरो, जागरण • श्रीनगर : दुश्मन के छक्के छुड़ाने एवं उसे घर में घुसकर मार गिराने की अपनी नई रणनीति को और धार देने के लिए भारतीय सेना ने रुद्र नाम की एक नई सर्वांग ब्रिगेड (आल आर्म्स ब्रिगेड) का गठन किया है। इसके साथ ही सीमा को और अभेद्य बनाने के लिए भैरव लाइट कमांडो बटालियन भी तैयार की गई है। रुद्र और भैरव को अत्याधुनिक युद्धक साजो सामान से लैस किया गया है। रुद्र ब्रिगेड दुश्मन का काल बनेगी और भैरव कमांडो दुश्मन पर कहर ढाएंगे। कारगिल विजय दिवस के अवसर पर लद्दाख के द्रास में शनिवार को वीर बलिदानियों के शौर्य को नमन करते हुए थलसेना प्रमुख जनरल उपेंद्र द्विवेदी ने कहा कि भारतीय सेना विभिन्न मोर्चों पर लगातार नई चुनौतियों का साहसपूर्वक सामना कर रही है। युद्ध के तौर तरीके बदल रहे हैं, इसलिए हम निरंतर एक आधुनिक और भविष्य की सैन्य शक्ति के रूप में अपनी क्षमता को बढ़ा रहे हैं। ऐसे में शुक्रवार को ही थलसेना अध्यक्ष ने रुद्र ब्रिगेड और भैरव बटालियन के गठन को मंजूरी दी है।

थलसेना प्रमुख ने कारगिल के बलिदानियों को श्रद्धांजलि अर्पित करते हुए कहा कि हम टाइगर हिल, तोलोलिंग और प्वाइंट 4875 के पास खड़े होकर योद्धाओं के संकल्प और वीरता को याद कर रहे हैं। हम उन लोगों को नमन करते हैं, जिन्होंने राष्ट्र की सुरक्षा के लिए अपने प्राणों की आहुति दे दी। वर्ष 1999 में भारत ने आपरेशन विजय के तहत एक अद्वितीय विजय प्राप्त की। उन्होंने



कारगिल विजय दिवस की 26वीं वर्षगांठ पर शनिवार को सेना प्रमुख जनरल उपेंद्र द्विवेदी ने द्रास में बलिदानियों को श्रद्धांजलि अर्पित की • एएनआइ

- कहा-सरकार की खुली छूट मिलते ही पाकिस्तान को दिया उसी की भाषा में जवाब
- यह नए भारत का संकल्प, जो षड्यंत्र करेगा, उसपर आगे भी ऐसी ही कार्रवाई होगी

अब हर पैदल सेना बटालियन में ड्रोन प्लाटून

जनरल द्विवेदी ने बताया कि अब हर पैदल सेना बटालियन में ड्रोन प्लाटून शामिल हैं, जबकि तोपखाने ने दिव्यास्त्र और लाइट र म्यूनिशन बैटरियों के माध्यम से अपनी मारक क्षमता कई गुना बढ़ा दी है। सेना की एयर डिफेंस को स्वदेशी मिसाइल प्रणालियों से लैस किया जा रहा है। उन्होंने एयर डिफेंस सिस्टम के स्वदेशीकरण में हो रही प्रगति का उल्लेख करते हुए कहा कि हम 100वें स्वतंत्रता दिवस तक विकसित भारत का सपना साकार करने के लिए पूरी तरह तैयार हैं।

आपरेशन सिंदूर का उल्लेख करते हुए कहा कि सरकार की खुली छूट मिली और हमने पाकिस्तान को उसकी ही भाषा में समझाया। यह नए भारत का संकल्प है, जो भारत के खिलाफ किसी भी तरह का षड्यंत्र करेगा, उसपर आगे भी ऐसी ही कार्रवाई होगी।

आपरेशन सिंदूर हमारा संकल्प, संदेश व प्रतिक्रिया : इससे पहले थलसेना प्रमुख जनरल उपेंद्र

कैसे काम करेगी रुद्र ब्रिगेड

रुद्र सर्वांग ब्रिगेड को एक ऐसी सैन्य इकाई के रूप में समझा जा सकता है जिसमें पैदल सेना, बख्तरबंद वाहन, तोपखाना, स्पेशल फोर्स, मैकेनाइज्ड इन्फैंट्री, अनमैन्ड एरियल सिस्टम और अन्य सहायक इकाइयां मिलकर काम करती हैं, ताकि इस एक प्रभावी और एकीकृत सैन्य बल बनाया जा सके। इसका लाभ यह होगा कि युद्ध के मैदान में सभी क्षमताओं का एक साथ प्रभावी ढंग से इस्तेमाल संभव होगा। ब्रिगेड के पास विभिन्न प्रकार की चुनौतियों का सामना करने के लिए आवश्यक उपकरण और विशेषज्ञता मौजूद रहेगी।

सीमा अभेद्य बनाएगी भैरव बटालियन

रुद्र की तरह ही भैरव लाइट कमांडो बटालियन सेना की पहले से मौजूदा घातक इकाइयों के अतिरिक्त होगी। सीमा पर दुश्मन को मार गिराने के लिए भैरव का गठन किया गया है। इससे सीमा पार से होने वाली आतंकियों की घुसपैट पर भी लगाम लगेगी। भैरव लाइट कमांडो यूनिट से सेना की ताकत व क्षमता कई गुना बढ़ जाएगी।



द्विवेदी ने कहा कि पहलगाम में हुआ कायरतापूर्ण हमला पूरे देश के लिए गहरी चोट था। सरकार की खुली छूट व देशवासियों के अटूट विश्वास से छह-सात मई की रात को सेना ने पाकिस्तान व गुलाम जम्मू-कश्मीर में नौ बड़े आतंकी ठिकानों को नष्ट कर दिया। यह केवल जवाब नहीं था, बल्कि स्पष्ट संदेश था कि आतंक को समर्थन देने वाले बचेंगे नहीं।

पाकिस्तान के हिंसक हमलों का भी भारतीय सेना ने मुंहतोड़ जवाब दिया। हमारी आर्मी और एयर डिफेंस एक अजेय दीवार बनकर खड़ी रही। दुश्मन के ड्रोन और मिसाइल हमले विफल रहे। आपरेशन सिंदूर हमारा संकल्प, संदेश और प्रतिक्रिया है।

सैनिकों और उनके स्वजन को मिलेगी निशुल्क कानूनी सेवाएं >> पेज 11

संबंधित >> पेज 11 व संपादकीय

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Army to add more muscle on Pakistan, China fronts

Source: *The Times of India*, Dt. 27 Jul 2025

With the collusive military threat from China and Pakistan figuring high on India's radar screens, which was reinforced during Operation Sindoor, the Army is now setting up some new 'Rudra' all-arms brigades and 'Bhairav' light commando battalions for a greater and swifter offensive punch along the borders.

The 11.5-lakh strong Army is also going in for 'Shaktibaan' artillery regiments, with special 'Divyastra' surveillance and loitering munitions batteries, and will also progressively equip all its 400-odd infantry battalions with drone platoons, against the backdrop of drone warfare upending all conventional military tactics in conflicts across the globe.

Announcing these steps towards transforming and modernising the Army into "a future-ready force" during the Kargil Vijay Diwas in Drass on Saturday, General Upendra Dwivedi said India had delivered "a well-planned, precise, and decisive response" to Pakistan during the May 7-10 cross-border hostilities to "achieve a decisive victory".

'Rudra brigades to have all combat elements, to be deployed together'

We gave them (Pakistan) a chance for peace but they acted with cowardice. We then answered with only valour...Operation Sindoor is our resolve, our message, and our response," General Upendra Dwivedi said, warning Pakistan against misadventures in the future. "With the unwavering trust of the countrymen and the strategic autonomy granted by the govt, the Army delivered a well-planned, precise, and decisive response.

2 RUDRA BRIGADES

- Some existing units & formations **being converted to all-arms ones** by integrating infantry, mechanised infantry, armoured (tanks), artillery, special forces and UAVs
- Two of these **Rudra brigades** already set up; all units in these will be deployed together permanently
- **New Bhairav light commando battalions**, drawn from infantry, to have latest weapons, gadgets & drones

The Army chief's transformation announcements involve conversion of existing units and formations, without fresh troop accretions, a senior officer told TOI. Some of the existing over 250 single-arm brigades (over 3,000 soldiers each) are now being converted to all-arms ones with integration of fighting elements like infantry, mechanised infantry, armoured (tanks), artillery, Special Forces and UAVs (unmanned aerial vehicles), which will be backed by customised

logistics and combat support. The bulk of the existing brigades are from the infantry, with the others being from other arms like the artillery, armoured, mechanised infantry, air defence and the like. At present, these brigades, commanded by one-star officers or brigadiers, come together only during exercises or actual combat.

"Now, the ones being converted to Rudra brigades, tailor-made for specific areas and tasks along the borders, will have all combat elements and be permanently deployed together in peace and war. Their re-structuring has been validated and approved. Two Rudra brigades have already been set up," the senior officer said.

This is in tune with the long-pending proposal to restructure some Army formations into self-contained 'integrated battle groups (IBGs)', with 5,000-6,000 soldiers and a varying mix of infantry, tanks, artillery, air defence, signals, engineers and other units to be commanded by Major-Generals, which is yet to be approved by the govt.

The new Bhairav light commando battalions will be in addition to the existing specially-trained and equipped 10 Para-Special Forces and five Para (Airborne) battalions (each has around 620 soldiers) meant for covert warfare deep behind enemy lines.

The plan is to raise at least 40-50 Bhairav battalions, drawn from existing infantry units and equipped with the latest weapons, gadgets and drones, in phases. Indicating that a few have already been raised, Gen Dwivedi said, "The agile and lethal special forces Bhairav units are ready to surprise the enemy on the borders."

"Every infantry battalion will have drone platoons, while the firepower of the artillery has been multiplied many times through Divyastra batteries and loiter munitions batteries. The Army Air Defence (AAD) is being equipped with indigenous missile systems," he added.

The AAD is slated to get two new regiments of the Akash Prime surface-to-air missiles designed for air defence in high-altitude areas along the frontier with China for Rs 8,160 crore as well as three regiments of the new quick reaction surface to air missile (QRSAM) systems for Rs 36,000 crore (which includes three squadrons also for IAF), as was reported by TOI earlier.

Akash Prime has the capability to intercept hostile aircraft, helicopters and drones at a 25km range, it is 30km for the highly-mobile QRSAMs. They will add to India's existing multi-layered air defence network that played a crucial role in thwarting multiple waves of Turkish-origin drones and Chinese missiles launched by Pakistan during Operation Sindoor.

<https://timesofindia.indiatimes.com/india/army-to-add-more-muscle-on-pakistan-china-fronts/articleshow/122928132.cms>

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India nears combat drone deal with the US

Source: Hindustan Times, Dt. 28 Jul 2025

Shouvik Das

shouvik.das@livemint.com

NEW DELHI: India is evaluating a combat drone deal with a built-in localisation blueprint—potentially marking a turning point in how the country procures and produces high-end military technology.

Under a \$4.5-billion emergency procurement programme launched soon after Operation Sindoor, the defence ministry is in advanced talks with US-based Shield AI to import its V-Bat combat drones for the Indian Air Force—while also laying the groundwork for local manufacturing through a joint venture with JSW Defence, part of the multi-industry conglomerate JSW Group.

The initial deal with the Indian Air Force is set to be worth \$35 million, which is the upper cap for a contract being signed under the emergency

procurement programme. Meanwhile, JSW Defence and Shield AI have entered into a \$90-million joint venture (JV) deal for transfer of the drone's technology to JSW. This could later make for a larger contract for the JV from the Air Force in the long run, three people with direct knowledge of the matter told *Mint*.

The imported drones, once approved, can be sourced as early as the first half of the 2026 calendar year. Subsequently, locally manufactured V-Bat drones could start being produced from JSW Defence's indigenous assembly line as early as the end of 2027.

The development not only marks the first instance of foreign defence technology being localised in India, but also mirrors a heightened sense of urgency in the country's defence corridors to acquire cutting-edge technology for contactless warfare, which include drones, loitering muni-



JSW Defence and Shield AI have entered into a \$90-mn JV deal for transfer of the drone's technology to JSW.

tions, ultra-high resolution and uninterrupted satellite surveillance, and more.

Shield AI's V-Bat combat drones, which were used by Ukraine in its offensive against Russia last year, can operate even in non-GPS, network-jammed airspace regions, providing a key edge in modern

warfare. These drones provide a level of sophistication and accuracy that cannot currently be matched by India's indigenous drones made both by private firms such as IdeaForge and the Defence Research and Development Organisation.

Further, according to a senior executive close to the development, the company's move to localize the drone in India with JSW Defence can help it operate outside the ambit of the US's restricted defence export controls—and catering to India itself, which is projected as a large defence market. The specifics of the deal are expected to be closed before the end of this calendar year.

Emails sent to the ministry of defence and Shield AI did not receive responses.

The Indian Air Force, Army and Navy will gain greater access to sophisticated global defence technology under an emergency procurement package cumulatively worth about

\$4.5 billion, which the defence ministry rolled out shortly after Operation Sindoor.

"The early deals are meant just to give India early access to fill in gaps in national defence, through imports," said a senior official requesting anonymity since the contracts are currently under evaluation. "Going forward, successful execution of the emergency procurement deals could lead to longer-term contracts."

A second official aware of the matter said that other private defence contractors currently in talks include vendors from Israel, as well as Ukraine, but no other private contractor has as yet indicated interest towards technology transfer to India.

"The most sophisticated technologies are right now not within the capabilities of Indian manufacturers, which necessitates us to procure cutting-edge weaponry from outside of India," this official said.

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आज के युग में युद्ध केवल बंदूकों और गोलियों से नहीं जीते जाते: राजनाथ सिंह

Source: Punjab Kesari, Dt. 28 Jul 2025

बडोदरा, (पंजाब केसरी): रक्षा मंत्री राजनाथ सिंह ने रविवार को बडोदरा स्थित गति शक्ति विश्वविद्यालय के दीक्षांत समारोह को संबोधित करते हुए कहा कि सशस्त्र बलों को जुटाने से लेकर सही समय और स्थान पर उपकरण पहुंचाने तक हमारी एजेंसियों द्वारा निर्बाध लॉजिस्टिक्स प्रबंधन 'ऑपरेशन सिंदूर' की सफलता में एक निर्णायक कारक था। आज के युग में युद्ध केवल बंदूकों और गोलियों से नहीं जीते जाते, बल्कि उनको समयबद्ध पहुंचाने से जीते जाते हैं और 'ऑपरेशन सिंदूर' उत्कृष्ट लॉजिस्टिक्स प्रबंधन का एक सजीव उदाहरण था।

उन्होंने कहा, दुनिया जिस तेजी से बदल रही है, वह प्रभावी एवं चौंकाने वाली भी है। रक्षा क्षेत्र भी बदल रहा है और युद्ध के तरीकों में भी बड़े बदलाव देखने को मिल रहे हैं। आज के दौर में युद्ध सिर्फ बंदूकों और गोलियों से नहीं, बल्कि समयबद्ध तरीके (चीजों का प्रबंधन करने) से जीते जाते हैं। राजनाथ ने इस बात पर जोर दिया कि संसाधनों का प्रबंधन युद्ध के मैदान में देश का भाग्य तय करता है। उन्होंने कहा कि जीत और हार जरूरी संसाधनों से तय होती है और 'ऑपरेशन सिंदूर' के दौरान पूरी दुनिया ने इसे देखा। राजनाथ ने कहा, ऑपरेशन सिंदूर की सफलता में संसाधनों का प्रबंधन एक निर्णायक कारक था। विभिन्न

● संसाधन प्रबंधन 'ऑपरेशन सिंदूर' की सफलता में एक निर्णायक कारक था



ताकत के साथ संसाधन प्रबंधन जरूरी

आज हम ऐसे दौर में हैं, जहां ताकत सिर्फ हथियारों से नहीं, बल्कि समय पर संसाधन प्रबंधन से मापी जाती है। चाहे युद्ध हो, आपदा हो या वैश्विक महामारी, यह सिद्ध हो चुका है कि जो राष्ट्र अपनी आपूर्ति शृंखला को मजबूत रखता है, वह सबसे स्थिर, सुरक्षित और सक्षम होता है। राजनाथ ने कहा कि सेना के लिए संसाधन प्रबंधन का मतलब है कि हथियार, ईंधन, राशन और दवाइयां बिना किसी देरी के दूर-दराज के इलाकों तक पहुंचें, जबकि नौसेना के मामले में इसका अर्थ यह सुनिश्चित करना है कि जहाजों को समय पर कलपुर्ज और अन्य उपकरण उपलब्ध हों।

एजेंसियों ने हमारे सशस्त्र बलों को जुटाने से लेकर सही समय पर सही जगह पर आवश्यक सामग्री पहुंचाने तक, जिस तरह से जरूरी संसाधनों का प्रबंधन किया, वह 'ऑपरेशन सिंदूर' की सफलता में एक निर्णायक कारक साबित हुआ। उन्होंने कहा कि 'लॉजिस्टिक्स' को केवल सामान पहुंचाने की प्रक्रिया के रूप में नहीं देखा जाना चाहिए, बल्कि इसे रणनीतिक रूप से महत्वपूर्ण क्षेत्र माना जाना चाहिए। रक्षा मंत्री ने कहा, संसाधन ही युद्धक्षेत्र को युद्धक्षेत्र बनाते हैं। संसाधनों के बिना, यह एक असमंजस का क्षेत्र बन जाएगा। युद्ध के दौरान अगर हथियार और गोला-

बारूद सही समय पर सही जगह न पहुंचें, तो इसका कोई मतलब नहीं है। हमारा संसाधन प्रबंधन जितना मजबूत होगा, हमारी सीमाएं भी उतनी ही सुरक्षित होंगी। रक्षा मंत्री ने कहा, और हमारी वायु सेना के लिए इसका मतलब यह सुनिश्चित करना है कि जमीनी सहायता और निर्बाध ईंधन आपूर्ति की मदद से जेट विमान बिना किसी बाधा के उड़ान भरना जारी रखें। जरा सोचिए, अगर हमारे पास उन्नत मिसाइल प्रणालियां हैं, लेकिन उन्हें प्रक्षेपित करने के लिए जरूरी इलेक्ट्रॉनिक उपकरण समय पर नहीं पहुंचते, तो उस तकनीकी का कोई फायदा नहीं है।

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'ऑपरेशन सिन्दूर ने दिखाया कि पचास से भी कम हथियारों से शत्रु को वार्ता की मेज पर ला सकते हैं'

Source: Jansatta, Dt. 26 Jul 2025

जनसत्ता ब्यूरो
नई दिल्ली, 25 जुलाई।

भारतीय वायुसेना के उप प्रमुख एअर मार्शल नर्मदेश्वर तिवारी ने शुक्रवार को कहा कि भारत के 'आपरेशन सिंदूर' ने यह दिखा दिया है कि कैसे 50 से भी कम हथियारों से दुश्मन को बातचीत की मेज पर लाया जा सकता है। उन्होंने इसे एक ऐसा उदाहरण बताया जिसका अध्ययन किया जाना चाहिए।

उन्होंने यह बात विचारक संस्था 'सेंटर आर एअर पावर स्टडीज' (सीएपीएस) और 'आलेज आफ एअर वारफेयर' द्वारा आयोजित



तिवारी ने कहा कि हमने लाभ-हानि, खासकर हवाई शक्ति के बारे में काफी चर्चा की। मुझे लगता है कि इससे बड़ा कोई उदाहरण नहीं है।

एक सम्मेलन के संवाद सत्र के दौरान कही। तिवारी ने कहा कि हमने लाभ-हानि, खासकर हवाई शक्ति के बारे में काफी चर्चा

की। मुझे लगता है कि इससे बड़ा कोई उदाहरण नहीं है। जैसा हमने 'आपरेशन सिंदूर' में किया। उन्होंने कहा कि 'आपरेशन सिंदूर' ने यह दिखा दिया है कि कैसे 50 से भी कम हथियारों से दुश्मन को बातचीत की मेज पर लाया जा सकता है।

वायु सेना उप प्रमुख ने सम्मेलन के पहले सत्र के दौरान कहा कि मुझे लगता है कि यह एक ऐसा उदाहरण है जिसका अध्ययन किया जाना चाहिए और मुझे यकीन है कि बाद में इसका अध्ययन किया जाएगा। एअर मार्शल तिवारी ने यह टिप्पणी दर्शकों के बीच बैठकर की।

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Just 50 air-launched weapons pulverised Pak, says IAF vice-chief

Source: The Times of India, Dt. 26 Jul 2025

Less than 50 air-launched weapons fired by India at airbases and radar sites in Pakistan during Operation Sindoor compelled the western adversary to come to the negotiating table and sue for peace, IAF vice chief Air Marshal Narmadeshwar Tiwari said on Friday. "We have discussed a lot about the cost-benefit, especially of air power. There is no greater example I think than what we did in Operation Sindoor. Less than 50 weapons can bring the adversary to the talking table...that is an example that needs to be studied and will be studied (by scholars)," Air Marshal Tiwari said, speaking at an interactive session during an aerospace power seminar here.

Chief of Defence Staff General Anil Chauhan, in turn, said the armed forces need to maintain "very high" operational readiness round-the-clock and throughout the year because Operation Sindoor "still continues", while stressing that "there are no runners-up in war".

Noting that the rapid advances in technology and the ongoing geopolitical churn have ushered in "a third revolution in warfare", the CDS said the Indian military needs "information warriors, technology warriors and scholar warriors" geared for multi-domain operations. It is essential for the military to learn both 'shastra' (warfare/weapons) and 'shaastra' (knowledge), he said.

Though Air Marshal Tiwari did not specify the weapons that were used during the May 7-10 hostilities, IAF deployed Sukhoi-30MKI, Rafale and Mirage-2000 fighters to launch BrahMos supersonic cruise missiles as well as Crystal Maze-2, Rampage and Scalp missiles for the calibrated pinpoint strikes on the Pakistani airbases and radar sites, a few of them close to nuclear facilities as well as command and control structures. The IAF vice chief also said manned systems like fighters "still have a huge advantage" over unmanned systems like drones, in terms of the "compellence" and "coercive diplomacy" to be imposed on an adversary, and will continue to do so for some time.

"We are giving too much importance to unmanned systems. While they have a place and relevance in modern warfare, but the kind of weight of attack, the intelligence required, the kind of damage they can cause...You have to see whether they balance with what manned aerial systems bring to the table," he said.

Different speakers at the "Capstone" seminar organised by the Centre for Air Power Studies and College of Air Warfare stressed the need for India to "prioritise" the development of aerospace power, which was "not escalatory" but "a strategic and effective tool for escalation control" as was witnessed during Operation Sindoor. "Operation Sindoor underlined the speed, reach and flexibility of airpower. We established escalation dominance over Pakistan," said a speaker. Others pointed out that India had drawn a new red line for Pakistan by stressing it will not be dissuaded by the western adversary's nuclear blackmail and continue to give cross-border kinetic responses to terror attacks in the future as well.

<https://timesofindia.indiatimes.com/india/just-50-air-launched-weapons-pulverised-pak-says-iaf-vice-chief/articleshow/122914122.cms>

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India reset ties with Maldives, extends \$565-mn credit lines; talks on FTA soon

Source: The Tribune, Dt. 26 Jul 2025

Modi, Muizzu vow strategic alignment, reaffirm cooperation in defence, maritime security

UBEER NAQUSHBANDI
TRIBUNE NEWS SERVICE

NEW DELHI, JULY 25

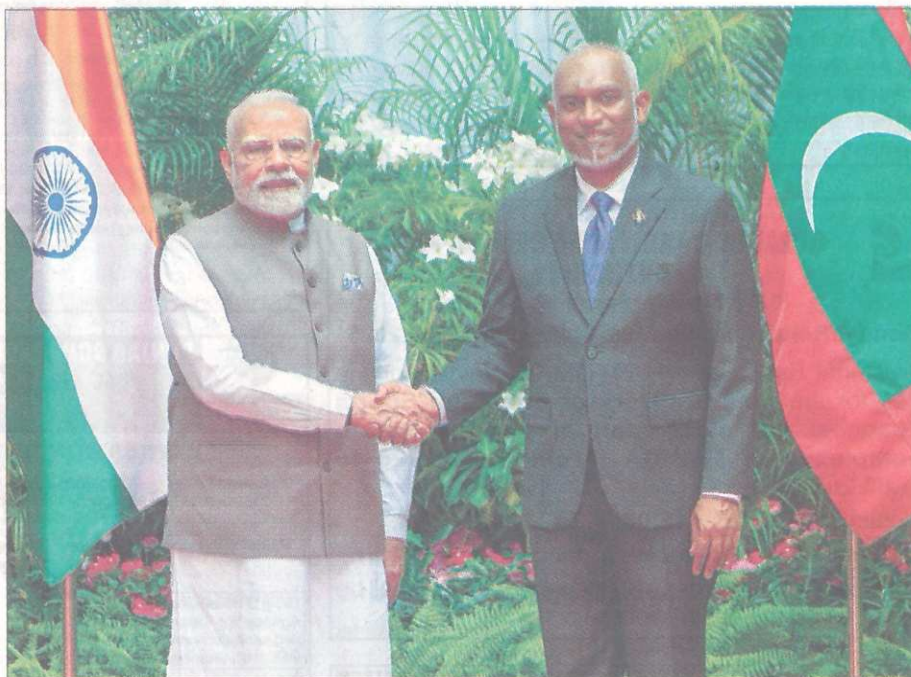
India on Friday extended a \$565 million line of credit to the Maldives as part of its renewed push to deepen the bilateral ties with the island nation.

The two sides also agreed to begin negotiations on a Free Trade Agreement (FTA) and move forward on a bilateral investment treaty, signalling a broader economic and strategic reset after months of strained relations.

"India is also proud to be the most-trusted friend of the Maldives," Prime Minister Narendra Modi said after his meeting with Maldivian President Mohamed Muizzu.

Modi landed in the Maldives on Friday for a two-day official visit, where he will serve as the chief guest at the country's 60th Independence Day celebrations. Upon arrival, he was welcomed by Muizzu and greeted with a traditional cultural performance.

According to Foreign Secretary Vikram Misri, this marks the first official state visit hosted by President Muizzu since he assumed



PM Narendra Modi meets Maldivian President Mohamed Muizzu at President House in Male on Friday. ANI

“India is also proud to be the most-trusted friend of the Maldives... India will always support the Maldives to strengthen its defence capabilities. Narendra Modi, PM

office in November 2023.

The trajectory of the India-Maldives ties over the past 18 months offers a clear illustration of how regional diploma-

cy in South Asia is shaped by domestic politics, but ultimately guided by strategic priorities. The Rs 4,850 crore credit line — equivalent to

nearly \$565 million — is expected to finance infrastructure and development projects in the Maldives, where India is seeking to

maintain influence amid a growing Chinese presence.

While anti-India rhetoric may yield short-term electoral gains, the demands of governance often require course correction. India's response, marked by strategic patience, development financing and restrained diplomacy, helped prevent a rupture and brought the relationship back from the brink.

As the Foreign Secretary puts it, "There will always be events that will impact or try to intrude on the relationship. But I think this is testimony to the kind of attention that has been paid to the relationship, including attention at the highest levels...we've continued to work at it, and I think the result is there for you to see."

That result is now on display in the Maldives: the diplomatic ties once under pressure are now back on a path of strategic alignment.

Modi and Muizzu also reaffirmed mutual cooperation in defence and maritime security. "Mutual cooperation in the field of defence and security is a testament to mutual

CONTINUED ON PAGE 14

trust,” PM Modi said, adding, “India will always support the Maldives to strengthen its defence capabilities.” The meeting marks the first in-person interaction between both the leaders since the latter took office last year amid tensions over his pro-China tilt and calls for Indian military personnel to leave the island nation.

The political landscape had shifted sharply in 2023 between India and Maldives, when Muizzu assumed office in November that year. He did so on the back of a populist and explicitly anti-India plank. His campaign’s rallying cry, “India Out”, targeted the presence of Indian defence personnel stationed to operate aircraft and radar platforms provided by India. Though deployed under bilateral defence cooperation agreements, these personnel were portrayed as symbols of excessive foreign influence.

Despite the provocations, India opted for engagement over escalation. Rather than respond with counter-rhetoric

or curtail ties, it took a long view of the relationship.

When Muizzu took office, India sent a Cabinet minister to attend his swearing-in. PM Modi met Muizzu on the sidelines of COP28 in December 2023, and External Affairs Minister S Jaishankar followed up with a “frank conversation” at the Non-Aligned Movement Summit in January 2024.

India’s response was shaped by an understanding of Maldivian domestic compulsions. When Muizzu demanded the withdrawal of military personnel, India agreed, but replaced the 76 defence staff with civilian technicians in May 2024.

India also upped its economic engagement. It increased development assistance to Rs 600 crore, raised trade quotas, and accelerated work on key infrastructure, without any fanfare. By May 2024, Maldivian Foreign Minister Moosa Zameer was in New Delhi, seeking support and signalling readiness to restore ties.

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ऑपरेशन सिन्दूर के बाद पहली बार मुनीर पहुंचे चीन

Source: Dainik Jagran, Dt. 26 Jul 2025



युद्ध के बाद चीन पहुंचे आसिम मुनीर

बीजिंग, प्रेटर : आपरेशन सिंदूर के बाद पहली बार बीजिंग की यात्रा पहुंचे पाकिस्तानी सेना प्रमुख आसिम मुनीर ने शुक्रवार को शीर्ष चीनी नेताओं से वार्ता की व सभी क्षेत्रों में सहयोग बढ़ाने पर चर्चा की। मुनीर ने उपराष्ट्रपति हान झोंग, शीर्ष सैन्य अधिकारी जनरल झांग यूशिया और विदेश मंत्री वांग यी के साथ बैठकें कीं। वहीं, झांग ने कहा कि चीन, पाकिस्तान के साथ आतंकवाद के खिलाफ सहयोग को मजबूत करने का इच्छुक है। कहा- चीन, बलूचिस्तान लिबरेशन आर्मी सहित आतंकवादी समूहों द्वारा सीपेक परियोजना पर काम कर रहे चीनी नागरिकों को निशाना बनाए जाने से काफी चिंतित है।

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As India watches, Pakistan Army Chief Asim Munir holds high-level talks in Beijing

Source: The Economic Times, Dt. 26 Jul 2025

Pakistan army chief Field Marshal Asim Munir has skipped his scheduled trips to Sri Lanka and Indonesia this month and rushed to Beijing to meet Chinese foreign minister Wang Yi and senior military officials.

The visit is being seen as a balancing act as Pakistan's deputy prime minister and foreign minister Ishaq Dar is in Washington to meet secretary of state Marco Rubio.

During the meeting with Munir, Wang Yi is understood to have expressed serious concerns regarding the safety and security of Chinese nationals, projects and institutions in Pakistan.

Experts noted that Pakistan's military is walking a fine balance between the US and China with an eye on countering India and asserting its relevance in South Asia.

On Thursday, MEA MoS Kirti Vardhan Singh said India has repeatedly raised its concerns regarding the US support to Pakistan's military infrastructure.

"Government of India closely monitors all military and security-related developments in its neighbourhood and regularly takes up our concerns in this regard in our interactions with our partners at appropriate level," the minister said in reply to a question.

<https://economictimes.indiatimes.com/news/defence/as-india-watches-pakistan-army-chief-asim-munir-holds-high-level-talks-in-beijing/articleshow/122909524.cms?from=mdr>

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Army To Get Air Defence Fire Control Radars

Source: The Asian Age, Dt. 26 Jul 2025

The defence ministry on Friday signed a Rs 2,000 crore contract with Bharat Electronics Limited (BEL) for the procurement of made-in-India air defence fire control radars for the Army. These radars will be able to detect all forms of air-borne threats, including fighter aircraft, attack helicopters and enemy drones.

This would mark a significant milestone in the modernisation of the air defence regiments and enhance the Army's operational readiness, while contributing to the economic growth of the nation.

The deal has been signed under the buy (Indian-indigenously designed developed and manufactured) category by senior officials of the defence ministry and BEL in the presence of defence secretary Rajesh Kumar Singh.

With minimum 70 per cent indigenous content, the procurement marks a pivotal step towards empowering indigenous defence industries by encouraging Indian MSMEs through components' manufacturing and raw material supply.

<https://www.asianage.com/nation/army-to-get-air-defence-fire-control-radars-1893698>

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भारत-सिंगापुर का साझा सैनिक अभ्यास जोधपुर में शुरू

Source: Jansatta, Dt. 28 Jul 2025

भारत-सिंगापुर के बीच संयुक्त सैन्य अभ्यास 'बोल्ड कुरुक्षेत्र' का 14वां संस्करण रविवार से जोधपुर में शुरू हुआ, जो 4 अगस्त तक चलेगा। इस अभ्यास में 4 सिंगापुर आर्मर्ड ब्रिगेड की 42 सिंगापुर आर्मर्ड रेजिमेंट और भारतीय सेना की मैकेनाइज्ड इन्फैंट्री रेजिमेंट भाग ले रही है।

यह अभ्यास एक टेबल टॉप अभ्यास और कंप्यूटर-आधारित युद्धाभ्यास के रूप में होगा। इसका उद्देश्य यंत्रीकृत युद्ध के लिए संचालन प्रक्रियाओं को मजबूत करना है। इसका समापन भारतीय सेना के उपकरणों के प्रदर्शन के साथ होगा। इससे दोनों देशों की सेनाओं के बीच द्विपक्षीय रक्षा सहयोग मजबूत होंगे।

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समयबद्ध प्रबंधन से मिली सेना को जीत

Source: Jansatta, Dt. 28 Jul 2025

वडोदरा, 27 जुलाई (भाषा)।

रक्षा मंत्री राजनाथ सिंह ने रविवार को कहा कि पहलगाम हमले के बाद पाकिस्तान में आतंकवादी ढांचे को निशाना बनाकर भारतीय सशस्त्र बलों की ओर से मई में शुरू किए गए 'आपरेशन सिंदूर' की सफलता में विभिन्न एजेंसियों द्वारा संसाधनों (लाजिस्टिक) का प्रबंधन एक निर्णायक कारक था। उन्होंने कहा कि आज के दौर में युद्ध सिर्फ बंदूकों और गोलियों से नहीं, बल्कि समयबद्ध तरीके (चीजों का प्रबंधन करने) से जीते जाते हैं।

राजनाथ वडोदरा में रेल मंत्रालय के तहत आने वाले गति शक्ति विश्वविद्यालय के तीसरे दीक्षांत समारोह में विद्यार्थियों और अध्यापकों को डिजिटल माध्यम से संबोधित



कहा, जीत और हार जरूरी संसाधनों से तय होती है और 'आपरेशन सिंदूर' के दौरान पूरी दुनिया ने इसे देखा।

कर रहे थे। उन्होंने कहा कि दुनिया जिस तेजी से बदल रही है, वह प्रभावी एवं चौकाने वाली भी है। रक्षा क्षेत्र भी बदल रहा है और युद्ध के तरीकों में भी बड़े बदलाव देखने को मिल रहे हैं। आज के दौर में युद्ध सिर्फ बंदूकों और गोलियों से नहीं, बल्कि समयबद्ध तरीके (चीजों का प्रबंधन करने) से जीते जाते हैं। राजनाथ ने इस बात पर जोर दिया कि संसाधनों का प्रबंधन युद्ध के मैदान में देश

का भाग्य तय करता है।

उन्होंने कहा कि जीत और हार जरूरी संसाधनों से तय होती है और 'आपरेशन सिंदूर' के दौरान पूरी दुनिया ने इसे देखा। राजनाथ ने कहा कि आपरेशन सिंदूर की सफलता में संसाधनों का प्रबंधन एक निर्णायक कारक था।

विभिन्न एजेंसियों ने हमारे सशस्त्र बलों को जुटाने से लेकर सही समय पर सही जगह पर आवश्यक सामग्री पहुंचाने तक, जिस तरह से जरूरी संसाधनों का प्रबंधन किया, वह 'आपरेशन सिंदूर' की सफलता में एक निर्णायक कारक साबित हुआ।

उन्होंने कहा कि 'लाजिस्टिक' को केवल सामान पहुंचाने की प्रक्रिया के रूप में नहीं देखा जाना चाहिए, बल्कि इसे रणनीतिक रूप से महत्वपूर्ण क्षेत्र माना जाना चाहिए।

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Op Sindoor showcased power of precision logistics: Rajnath

Source: The Tribune, Dt. 28 Jul 2025

Defence Minister Rajnath Singh on Sunday credited the success of Operation Sindoor to seamless logistics management, calling it a decisive factor that enabled swift mobilisation and operational efficiency. "Wars today are not won just with guns and bullets, but with their timely delivery," Singh said, addressing the convocation ceremony of Gati Shakti Vishwavidyalaya (GSV) in Vadodara via video. "Operation Sindoor was a vivid example of what excellent logistics can achieve," he added.

The Defence Minister stressed that logistics must be viewed through the lens of strategic importance, rather than merely as a support function. "Whether it's soldiers at the frontlines or disaster relief teams, without proper coordination and resource management, even the strongest of intentions can falter. Logistics is the power that transforms chaos into control," he said.

Singh also spoke about the upcoming National Logistics Policy, aimed at building an integrated, efficient and cost-effective logistics ecosystem. "Our goal is to reduce logistics costs from the current 13-14 per cent to levels seen in developed countries. This will enhance the global competitiveness of Indian products and drive growth across sectors," he said, noting the importance of data-driven decision-making in the new framework. The Gati Shakti Vishwavidyalaya, established in 2022 under the Ministry of Railways, is India's first university dedicated to creating skilled talent in the logistics and transportation sectors.

<https://www.tribuneindia.com/news/india/op-sindoor-showcased-power-of-precision-logistics-rajnath/>

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Operation Sindoor stern message to terror backers: Army Chief

Source: The Tribune, Dt. 27 Jul 2025

Army Chief General Upendra Dwivedi on Saturday said Operation Sindoor was a clear message "that those who support terrorism will not be spared". "On the night of May 6 and 7, the Army targeted nine high-value terrorist locations in Pakistan and Pakistan-occupied Kashmir without harming any innocent citizens. This was not just an answer but a clear message that those who support terrorism will not be spared," General Dwivedi said during his address on Kargil Vijay Diwas. An event was organised to mark the occasion at the Kargil War Memorial in Ladakh.

He said after the Army's unprecedented victory in 1999, it became clear that the military won't allow the country's unity and integrity to be harmed. General Dwivedi said, "The same tradition continued during Operation Sindoor, when the Army, with the same courage and determination, targeted terrorist infrastructure in Pakistan and achieved a decisive victory by effectively repelling the offensive operations by Pakistan."

Stating that while India gave peace a chance, Pakistan acted with cowardice, the Army Chief said, "Operation Sindoor was our resolve, our message and our answer." He emphasised that after the Pahalgam terror attack in April, it was decided that the response "would be decisive". "Our air defence stood like an unbreakable wall. No drone or missile could breach it. This was possible due to the whole-of-nation approach, where the Army, Air Force, Navy, the government and private

departments and even NGOs stood together,” he said. The Army Chief warned that any forces planning to harm India’s sovereignty, integrity or people would face a “decisive answer. This is the new normal of India,” he said, adding that while “India seeks peace, it will respond decisively to provocation”. General Dwivedi stressed that today’s Army was not only successfully countering current challenges but also evolving into a modern, transformative and future-oriented force.

Announcing the sanctioning of an all-arms brigade, “Rudra”, he said, “This brigade will integrate combat components such as infantry, mechanised infantry, armoured units, artillery, special forces and unmanned aerial systems, along with logistic and combat support.” Additionally, he revealed that agile and lethal special forces, the Bhairav Light Commando Battalion, had been raised and were always ready to surprise the enemy at the borders. General Dwivedi also highlighted the creation of drone platoons in every infantry battalion and the formation of a ‘Shaktibaan’ regiment in the artillery, equipped with drone and counter-drone systems as well as loitering ammunition.

“A diverse composite battery has also been established in every regiment, equipped with these advanced systems,” he said. The Army Chief noted that combat capabilities would multiply in the coming days, with the Army’s air defence being upgraded with indigenous missile systems. He also spoke about the Army’s role in nation-building in border areas through various initiatives.

<https://www.tribuneindia.com/news/india/operation-sindoor-stern-message-to-terror-backers-army-chief/>

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ऑपरेशन सिन्दूर अब भी जारी, तैयारियां तेज करनी होंगी

Source: Punjab Kesari, Dt. 26 Jul 2025

नई दिल्ली, (पंजाब केसरी) : प्रमुख रक्षा अध्यक्ष (सीडीएस) जनरल अनिल चौहान ने शुक्रवार को कहा कि ऑपरेशन सिंदूर अब भी जारी है और देश को चौबीस घंटे व पूरे वर्ष बहुत उच्च स्तर की सैन्य तैयारी रखनी चाहिए। यहां सुब्रतो पार्क में आयोजित रक्षा संगोष्ठी को संबोधित करते हुए उन्होंने यह भी कहा कि भविष्य में सेना को “सूचना योद्धाओं, प्रौद्योगिकी योद्धाओं और विद्वान योद्धाओं” की भी जरूरत होगी। उन्होंने कहा कि युद्ध के इस परिदृश्य में, भावी सैनिकों को सूचना, प्रौद्योगिकी और शिक्षा के मामले में विद्वान होना होगा। 'नंबर 4 वॉरफेयर एंड एयरोस्पेस स्ट्रेटेजी प्रोग्राम' के तत्वावधान में 'एयरोस्पेस पावर : प्रिजर्विंग इंडियाज सोवरेनिटी एंड फर्दरिंग नेशनल इंटरस्ट्स' विषय पर यह सेमिनार आयोजित किया गया था। सीडीएस ने कहा कि युद्ध में



● युद्ध में कोई भी उपविजेता नहीं होता और किसी भी सेना को लगातार सतर्क रहना होगा

कोई भी उपविजेता नहीं होता और किसी भी सेना को लगातार सतर्क रहते हुए उच्च स्तर की अभियानगत तैयारी रखनी चाहिए। जनरल चौहान ने कहा कि ऑपरेशन सिंदूर इसका एक उदाहरण है, जो अब भी जारी है। हमारी तैयारी का स्तर बहुत ऊंचा होना चाहिए, चौबीस घंटे, 365 दिन। जम्मू कश्मीर के पहलगाम में 22 अप्रैल को हुए आतंकवादी हमले के जवाब में भारत ने सात मई की सुबह ऑपरेशन सिंदूर शुरू करके पाकिस्तान तथा पीओके में आतंकवादियों के कई ठिकानों को ध्वस्त कर दिया था। पाकिस्तान ने भी भारत के खिलाफ आक्रामक अभियान शुरू किया।

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'स्वदेशी हथियारों ने आतंक के आकाओं की उड़ा रखी नींद'

Source: Dainik Jagran, Dt. 27 Jul 2025

तूतुकुडी (तूतीकोरिन), एएनआइ : प्रधानमंत्री नरेन्द्र मोदी ने शनिवार को कहा कि 'मेक इन इंडिया' पहल के तहत निर्मित स्वदेशी हथियारों ने आपरेशन सिंदूर के दौरान अहम भूमिका निभाई। यही नहीं, इन्होंने अब भी आतंक के आकाओं की नींद उड़ा रखी है। पीएम मोदी यहां करीब 4,900 करोड़ रुपये की लागत की विभिन्न विकास परियोजनाओं का उद्घाटन और शिलान्यास करने उपरांत कार्यक्रम को संबोधित कर रहे थे। मालदीव की यात्रा समाप्त करने के बाद प्रधानमंत्री मोदी विशेष विमान से शाम करीब आठ बजे तूतीकोरिन हवाई अड्डे पर पहुंचे।

मोदी ने कहा- "आज, भारत सरकार मेक इन इंडिया और मिशन मैनुफैक्चरिंग पर जोर दे रही है। आपने हाल ही में आपरेशन सिंदूर के दौरान मेक इन इंडिया की शक्ति को देखा। भारत में निर्मित हथियारों ने आतंकियों के ठिकानों को ध्वस्त करने में महत्वपूर्ण भूमिका निभाई। सरकार स्वदेशी उत्पादों को बढ़ावा देने के लिए दृढ़ता से प्रयास कर रही है ताकि उत्पादन और आर्थिक विकास को बढ़ावा मिल सके।

मोदी ने भारत और ब्रिटेन के बीच हाल ही में हुए मुक्त व्यापार समझौते (एफटीए) को ऐतिहासिक बताते हुए कहा कि यह देश में दुनिया के विश्वास को दर्शाता है। यह भारत को दुनिया की तीसरी सबसे बड़ी आर्थिकी बनाने के लक्ष्य में भी मददगार साबित होगा। इस एफटीए के बाद, ब्रिटेन में बेचे जाने वाले 99% भारतीय उत्पादों पर कर नहीं लगेगा। जब ब्रिटेन में भारतीय सामान सस्ते होंगे, तो उनकी मांग बढ़ेगी। इससे युवाओं,

- प्रधानमंत्री बोले- आपरेशन सिंदूर के दौरान मेक इन इंडिया की शक्ति को सबने देखा
- ब्रिटेन के साथ ऐतिहासिक मुक्त व्यापार समझौता भारत में दुनिया के विश्वास को दर्शाता

हमारे छोटे उद्योगों, एमएसएमई और स्टार्ट-अप्स को सबसे अधिक लाभ पहुंचेगा। उन्होंने विकसित भारत और विकसित तमिलनाडु का वादा किया। कहा- "इन्फ्रास्ट्रक्चर और ऊर्जा किसी भी राज्य के विकास की रीढ़ हैं। पिछले 11 वर्षों में इन पर हमारा फोकस तमिलनाडु के विकास के प्रति प्रतिबद्धता दर्शाता है।"

आज चोल सम्राट के समुद्री अभियान के सहस्राब्दी समारोह में शिरकत करेंगे मोदी : नई दिल्ली से आइएनएस के अनुसार, प्रधानमंत्री मोदी रविवार को चोल सम्राट राजेंद्र चोल के समुद्री अभियान के सहस्राब्दी समारोह में शामिल होंगे। इस दौरान मोदी भारत के महानतम सम्राटों में से एक राजेंद्र चोल के सम्मान में एक स्मारक सिक्का भी जारी करेंगे।

मोदी ने एक्स पर लिखा कि 27 जुलाई को महान राजेंद्र चोल प्रथम के समुद्री अभियान के एक हजार वर्ष पूरे होने के उपलक्ष्य में एक विशेष कार्यक्रम आयोजित किया जाएगा। राजेंद्र चोल प्रथम (1014-1044 ई.) ने चोल साम्राज्य की सीमाओं का विस्तार किया और गंगईकोंडा चोलपुरम को नई राजधानी के रूप में स्थापित किया। यहां बना मंदिर चोल वास्तुकला का अद्भुत उदाहरण है और यूनेस्को विश्व धरोहर में भी शामिल है।

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Operation Sindoor ongoing, military must stay alert: CDS General Chauhan

Source: The Pioneer, Dt. 26 Jul 2025

Asserting that Operation Sindoor “still continues”, Chief of Defence Staff(CDS) General Anil Chauhan on Friday said the country’s military preparedness must remain at a “very high” level, round-the-clock and throughout the year.

In his keynote address at a defence seminar hosted at Subroto Park here, he also said the military in future will also need “information warriors, technology warriors and scholar warriors.” And, in an emerging landscape of warfare, a future soldier will need to be a mix of all three “info, tech and scholar warriors,” the CDS said.

The seminar on ‘Aerospace Power: Preserving India’s Sovereignty and Furthering National Interests’ was held under the aegis of the ‘No.4 Warfare and Aerospace Strategy Programme’. The CDS said there are no runners-up in a war, and any military must be constantly alert and maintain a high degree of operational preparedness.

“An example is Operation Sindoor, which still continues. Our preparedness level has to be very high, 24x7, 365 days (a year),” Gen Chauhan said.

India launched Operation Sindoor early on May 7 and decimated multiple terror infrastructure in Pakistan and Pakistan-Occupied-Kashmir (PoK). Pakistan also launched offensives against India, and all subsequent counter-offensives by India were also carried out under Operation Sindoor.

The military conflict between the two nuclear-armed neighbours halted after they reached an understanding on the evening of May 10.

The CDS also emphasised the importance of learning about both ‘Shastra’ (warfare) and ‘Shaastra’ (knowledge system).

Gen Chauhan defined a scholar warrior as a military professional who combines intellectual depth and combat skills, who possesses strong academic knowledge and practical military expertise that enable him to analyse complex situations and address “diverse challenges to meet military aims and objectives”. Tracing the relationship between a scholar and a warrior, from ancient Indian history, through the World Wars up to recent conflicts, the CDS highlighted that today’s military professional must be a “well-calibrated mix of a scholar warrior, a techno warrior and an info warrior”.

A technology warrior to understand and apply the new technologies that are changing the nature of warfare, and an “info warrior” to understand and explain India’s perspective and counter wrong narratives.

Elucidating the changing character of warfare, especially as evinced through recent and ongoing conflicts, the CDS underscored the important role of a scholar warrior in modern warfare, emphasising their role in preserving India’s sovereignty and furthering national interests.

Operation Sindoor was a critical focus and found ample mention during the two thematic sessions. The Headquarters Integrated Defence Staff (HQ IDS) also shared some photos of the event on social media.

“He complimented the #IndianAirForce, College of Air Warfare and @CAPS_INDIA for constantly evolving the scope of the program. #CDS awarded Certificates to 12 officers of #IndianArmedForces for their contribution in taking forward the strategic thought process,” it said.

IAF Chief Air Chief Marshal AP Singh was also present on the occasion.

<https://www.dailypioneer.com/2025/india/operation-sindoor-ongoing--military-must-stay-alert--cds-general-chauhan.html>

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Tejas Mk 1A set for missile test ahead of IAF delivery

Source: The Tribune, Dt. 28 Jul 2025

The Tejas Mark 1A fighter jet is advancing to its next phase, with testing of its onboard missiles set to begin shortly. If all goes as planned, the first batch of these jets will be handed over to the Indian Air Force (IAF) in the coming months.



The aircraft is now ready for a ‘roll out,’ indicating that manufacturer Hindustan Aeronautics Limited (HAL) has completed testing on a number of planes for all required parameters. The next step involves validating the jet’s combat capabilities, with a crucial live firing test of the Astra Mk1 Beyond Visual Range Air-to-Air Missile (BVRAAM) scheduled for early August 2025.

This test marks a critical phase in integrating the advanced indigenous missile system with the upgraded Tejas Mark 1A. While the older version of the Tejas, around 40 of which are already in service with the IAF, has been successfully integrated with the Astra missile, the Mark 1A requires fresh validation due to its new Active Electronically Scanned Array (AESA) radar. The Astra Mk1, developed by the Defence Research and Development Organisation (DRDO), is a formidable all-weather, day-and-night capable air-to-air missile. Once integrated, it will enable the Tejas to engage and destroy hostile aircraft from a standoff distance, a critical capability in modern aerial warfare.

The upcoming test is part of the final stages of validating the Tejas Mark 1A’s enhanced weapons package. Initial deliveries were originally slated to begin in March 2024, but the programme faced

delays, primarily due to supply of General Electric F404 engines. HAL currently holds an order for 83 Tejas Mk1A jets under a 2021 contract, with deliveries expected to be completed by 2028. An additional order for 97 aircraft is anticipated to be finalized by the end of 2025, with deliveries starting in 2028 and concluding by 2031.

<https://www.tribuneindia.com/news/india/tejas-mk-1a-set-for-missile-test-ahead-of-iaf-delivery/>

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Questions on OP Sindoor that need answers

-by Lt. Gen. Raj Kadyan (Retd)

Source: The Tribune, Dt. 26 Jul 2025



OPERATION Sindoor may have paused with the ceasefire. But the war over it continues. The new arena is the Parliament House, where the issue is slated to be debated next week. Some anticipated issues the Opposition may raise are discussed here.

While it is reasonable to assume Pakistan knew India would respond strongly to the massacre of innocents in Pahalgam, it did not know when, where and how. The first question that remains unsettled is — did we inform Pakistan in advance that we would be attacking their terror bases and which all? A video of our foreign minister saying so was in circulation. But today, everything can be faked. Later, the minister denied informing his Pakistani counterpart 'ahead' of the attacks. We must believe the minister. But the alacrity with which Pakistan reacted to our surprise attacks during night of May 6-7 is praiseworthy. It speaks very highly of its 'battle-readiness' and we need to factor it into the calculus of any future confrontation.

The second question is our agreeing to order a pause on the Pakistan DGMO's request made on May 10. Normally, the winning side would like to cash in on its gains and not accept a ceasefire till it feels it has achieved its aim. The related question likely to be raised is — did the US have any hand in pressuring India to sheath its swords? President Trump has been saying so ad nauseam. But since Prime Minister Modi has repeatedly asserted that there

was no US hand in the matter, the Opposition would press for clarity.

The third question is about the losses we suffered. In every war, we have declared the count of soldiers killed or wounded. It is not clear why there is so much secrecy this time. Apprehension that it would affect the forces' morale is misplaced. They already know what we have lost. The Pakistani claim that it downed six of our aircraft, including three Rafale fighter jets, is prima facie outrageous. The best way to counter this propaganda is through facts. Giving out details in tidbits through generals and air marshals is not convincing the public. The government must come clean.

Stoppage of flow of river waters to Pakistan is an effective way to pressure it and push it towards keeping peace. Some of us have been advocating this for long. One wonders why this was not done earlier. Pakistan is mainly an agrarian state. Controlling water flow is an effective weapon in India's arsenal to not only harm Pakistan economically but also cause public unrest which may ultimately contribute towards democracy taking roots there. The government has rightly put the Indus Water Treaty in abeyance. One hopes that decision is stuck to despite apprehension of similar threat from China.

We must also analyse the gains of Operation Sindoor. Causing damage to air defence systems is only the means to achieving our aim of deterring Pakistan from terror attacks. Field Marshal Asim Munir is thumping his chest over Pakistan's 'victory' in countering Op Sindoor.

We must remember that India is alone in this fight. It was disappointing, though not surprising, that while all countries to which we sent post-Sindoor delegations condemned the Pahalgam attack, hardly any country called out Pakistan by name.

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Will India's Future Wars be contact-less

-by Lt. Gen. Harbhajan Singh (Retd)

Source: The Tribune, Dt. 26 Jul 2025



LT GEN HARBHAJAN SINGH (RETD)

FORMER SIGNAL OFFICER-IN-CHIEF

OPERATION Sindoor was purely air warfare, which by nature is contact-less. However, the aerial battles took place across very long distances, the kind not seen before. Opposing planes never saw each other, nor were borders crossed! Similarly, Israel and Iran attacked each other with drones and missiles from very long distances with pinpoint accuracy. Anti-drone/missile weapons and measures cannot provide 100% safety.

This has led some to surmise that future wars will be contact-less. However, it is essential to realise that the last two conflicts mentioned above were not wars but short operations in which land and naval forces were hardly used.

The aim of both the operations was punitive. In case, Op Sindoor had extended by even a couple of weeks, land forces would have got involved, since there is a common border between the two countries and at places troops are deployed eyeball to eyeball that would have meant 'contact warfare'. Thus, concluding that future wars will be contactless based on very limited experience, is not prudent.

In the fighting on the ground particularly in mountainous regions — as existing on India's borders — contact warfare

will form an essential part.

Perforce, tactics in the battle area will have to undergo changes due to increased air-borne threats. Co-ordinated use of infantry and tank operations will invite considerable losses. Achieving 'tactical surprise' would become difficult. Electronic warfare and integrated air defence will assume critical importance. Measures will have to be taken to ensure the safety of Command and Control nodes and safety of commanders, which would be priority targets for drones.

It would be essential to keep up with technological developments available to our adversaries. This cat and mouse means of waging war is too dependent on technology, which is changing fast.

In 2023, Ukraine produced three lakh drones. The target for 2024 was one million small drones, over 10,000 strike drones with a flight range of a few hundred kilometres and more than a thousand with a greater range. While starting a non-contact war, the planners have to think of production at such kind of a large scale. It is doubtful if India and Pakistan, in particular, can afford such huge numbers. No wonder, Op Sindoor lasted only 88 hours.

Thus, it may be prudent to surmise that there may be a reduction in contact fighting and a greater use of drones and missiles than earlier. But in the Indian context, war with Pakistan is likely to experience more contact fighting than non-contact warfare. Both countries cannot afford to have the requisite number of missiles, drones and ammunition to fight more than a month. Also, both being nuclear nations, the developed world will intervene.

Against China, India has to raise its capacity and technology for missiles and drones and based on the experience in the Ukraine war. A holistic plan and policy need to be worked out.

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Science & Technology News

मिशन निसार: इसरो के रॉकेट से 30 जुलाई को नासा का उपग्रह होगा प्रक्षेपित

Source: Jansatta, Dt. 27 Jul 2025

तिरुचिरापल्ली, 26 जुलाई (भाषा)।

इसरो के रॉकेट से 30 जुलाई को नासा के पृथ्वी अवलोकन उपग्रह का प्रक्षेपण किया जाएगा। इसरो ने कहा, 'नासा-इसरो सिंथेटिक एपर्चर रडार (एनआइएसएआर) सैटेलाइट का प्रक्षेपण हमारे जीएसएलवी-एमके (जीएसएलवी-एफ 16) के माध्यम से किया जाएगा।' भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के अध्यक्ष वी नारायणन ने शनिवार को कहा कि यह अपनी तरह का पहला अभियान है।

इसरो के अनुसार, यह पहला ऐसा मिशन है जिसमें ड्यूल-बैंड रडार सैटेलाइट ले जाया

जाएगा। पहली बार किसी जीएसएलवी रॉकेट के जरिए ऐसे उपग्रह को सन-सिंक्रोनस आर्बिट (सूर्य-स्थिर कक्ष) में स्थापित किया जाएगा, जबकि अब तक यह काम मुख्यतः पीएसएलवी रॉकेट करते रहे हैं। इसके अलावा, यह इसरो और नासा का पहला संयुक्त पृथ्वी निगरानी मिशन भी है।

इस उपग्रह के विभिन्न पेलोड को इसरो और अमेरिका की जेट प्रोपल्शन लैबोरेटरी (जेपीएल) ने संयुक्त रूप से तैयार किया है। यह उपग्रह पृथ्वी अवलोकन और आपदा प्रबंधन के क्षेत्रों में वैश्विक समुदाय के लिए अत्यंत उपयोगी साबित होगा।

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What makes the NASA-ISRO NISAR satellite so special? | Explained

Source: The Hindu, Dt. 27 Jul 2025

The Indian Space Research Organisation (ISRO) is planning to launch the NISAR satellite from Sriharikota on July 30 onboard a GSLV Mk-II rocket. 'NISAR' stands for NASA-ISRO Synthetic Aperture Radar and is a joint mission of the two space agencies. It is a sophisticated earth-observation satellite designed to study changes on the earth's surface in fine detail, covering earthquakes, volcanoes, ecosystems, ice sheets, farmland, floods, and landslides.

What's the need for NISAR?

NISAR is the first major earth-observing mission with a dual-band radar, which will allow it to observe changes more precisely than any other satellite. It will be able to see through clouds, smoke, and even thick vegetation, both at day and night, in all weather conditions. The three-tonne machine has been a decade in the making and costs more than \$1.5 billion, also making it one of the most expensive earth-observing satellites to date.

The earth's surface is constantly changing. Natural disasters, human-driven changes, and climate shifts all affect environments and human societies. Satellites provide critical information by taking snapshots of these changes from space, helping scientists, governments, and relief agencies prepare for, respond to or study them. To this end, NASA and ISRO have created a powerful global

mission that also allows ISRO guaranteed access to a stream of high-resolution data tailored to India's needs.

NISAR's science and application goals span six areas: solid earth processes, ecosystems, ice dynamics, coastal and ocean processes, disaster response, and additional applications (including tracking groundwater, oil reservoirs, and infrastructure like levees, dams, and roads for subsidence or deformation and supporting food security research).

The planned mission lifetime is three years although its design lifetime is at least five years. Notably, the mission's data policy entails that the data NISAR produces will be freely available to all users (typically) within a few hours.

How does NISAR work?

Once it is launched, NISAR will enter into a sun-synchronous polar orbit at 747 km altitude and an inclination of 98.4°. From here, instead of snapping pictures, NISAR's synthetic aperture radar (SAR) will bounce radar waves off the planet's surface and measure how long the signal takes to come back and how its phase changes.

The ability of a radar antenna to resolve smaller details increases with its length, called its aperture. In orbit, deploying an antenna hundreds of metres long is impractical. SAR gets around this by mimicking a giant antenna. As the spacecraft moves forward, it transmits a train of radar pulses and records the echoes. Later, a computer coherently combines all those echoes as if they had been captured simultaneously by one very long antenna, hence the "synthetic aperture".

NISAR will combine an L-band SAR (1.257 GHz), which uses longer-wavelength radiowaves to track changes under thick forests and soil and deformations on the ground, and an S-band SAR (3.2 GHz), which uses shorter-wavelength radiowaves to capture surface details, such as crops and water surfaces.

What is synthetic aperture radar?

Although NISAR will operate globally at L-band, ISRO has reserved routine, planned acquisitions with the S-band SAR over India. The latter acquisitions have extended sensitivity to biomass, better soil-moisture retrieval, and mitigate ionospheric noise — all capabilities tuned to India's needs in agriculture, forestry, and disaster management.

Because the L-band radar is the principal tool for NASA's mission goals, the instrument is expected to operate in up to 70% of every orbit. This said, operating both radars together is an official implementation goal so that mode conflicts over the Indian subcontinent are minimised.

Polarisation is the direction in which the electric field of some electromagnetic radiation, like radiowaves, oscillates. SAR can transmit and receive radar signals with horizontal or vertical polarisation. Using different combinations will allow the instruments to identify the structure and types of different surface materials, like soil, snow, crop or wood.

The swath width, i.e. the breadth of the bands on the ground the SARs will scan, is an ultra-wide 240 km. The radars' SweepSAR design will transmit this beam and, upon its return, digitally steer multiple small sub-apertures in sequence, synthesising beams that sweep across the ground track. This scan-on-receive method allows the 240-km swath without compromising resolution.

The resulting scans will have a spatial resolution of 3-10 m and centrimetre-scale vertical mapping — enough to spot impending land subsidence in cities, for example — depending on the mode.

Each spot on the ground will be scanned once every 12 days. The satellite also features a large 12-m-wide mesh antenna.

NISAR will produce annual maps of aboveground woody biomass of 1 ha resolution and quarterly maps of active and inactive cropland. High-resolution maps of flooded versus dry areas will be available as well. During a disaster, NISAR can also be directed to collect data for 'damage proxy maps' to be delivered in under five hours.

This said, for certain acquisition modes, NISAR won't be able to achieve full global coverage at the highest resolution. Above roughly 60° latitude, every alternative observation will be skipped due to converging ground tracks. Similarly, some 10% of the surface may not be mapped from either direction (of the satellite's passage over the ground) in any given 12-day cycle.

How was NISAR built?

At the time the two space organisations agreed to build NISAR, NASA and ISRO decided each body would contribute equivalent-scale hardware, expertise, and funding. ISRO's contributions in particular are mission-critical.

The organisation supplied the I-3K spacecraft bus, the platform that houses the controls to handle command and data, propulsion, and attitude, plus 4 kW of solar power. The same package also included the entire S-band radar electronics, a high-rate Ka-band telecom subsystem, and a gimballed high-gain antenna. The S-band electronics were designed and built at the Space Applications Centre in Ahmedabad.

NASA's biggest contribution was the complete L-band SAR system. NASA's Jet Propulsion Laboratory supplied all radio-frequency electronics, the 12-m antenna, a 9-m carbon-composite boom, and the instrument structure that carries both radars. The agency also fabricated the L-band feed aperture and provided the supporting avionics, including a high-capacity solid-state recorder, a GPS receiver, an autonomous payload data system, and a Ka-band payload communications subsystem.

The spacecraft was to be integrated at the ISRO Satellite Centre in Bengaluru after the two radars were mated at JPL. The final observatory-level tests will therefore have taken place on Indian soil. After that the mission will lift off from Sriharikota onboard a GSLV Mk-II launch vehicle, with ISRO providing end-to-end launch services and documentation.

While the mission operations are to be centred at the JPL Mission Operations Center, day-to-day flight operations will be led from the ISRO Telemetry, Tracking and Command Network in Bengaluru. Once NISAR is in orbit, most of its data will be sent through NASA's Near Earth Network facilities in Alaska, Svalbard (Norway), and Punta Arenas (Chile), which can together receive around 3 TB of radar data per day. They will be complemented by ISRO's ground stations in Shadnagar and Antarctica.

After the raw data arrive, India's National Remote Sensing Centre will process and distribute all products required for Indian users, mirroring NASA's pipeline.

<https://www.thehindu.com/sci-tech/science/what-makes-the-nasa-isro-nisar-satellite-so-special-explained/article69845156.ece>

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India's AI Dream Faces a Hard Reality Check

Source: The Pioneer, Dt. 28 Jul 2025

A press release issued by the Ministry of Electronics and Information Technology (MeitY) in March 2025 claimed that India was on the cusp of an AI revolution, having allocated Rs 10,300 crore, or US\$ 1.2 billion, over the next five years to develop a high-end common computing facility equipped with 18,693 GPUs, making it one of the most extensive AI compute infrastructures globally.

This can give India substantial computing power, given that the Chinese open-source AI model DeepSeek uses only 2000 GPUs and operates on 25000 GPUs. However, the promise to make India a global AI giant is unlikely to be fulfilled anytime soon.

A reality check might help the mandarins at MeitY to wake up from their make-believe world of AI greatness and realign their policies with a wartime urgency, because the fact remains that India is a laggard in the global AI race in which the US and China are lightyears ahead of us. It is not that India lacks talent — it has a 1.2 million strong talent pool of AI/ML professionals — its educational ecosystem turns out over 22,000 AI specialists every year. It boasts a vibrant tech ecosystem that facilitates AI applications.

AI systems require massive amounts of data; indeed, AI is only as good as the data that fuels it, and India has one of the biggest data ecosystems in the world — its 900 million internet users generate huge amounts of data. But our AI innovations are still stuck at a nascent stage with huge resource constraints and lag way behind the frontrunners in scale, innovation and research. With just 33 supercomputers, none of them dedicated to AI, India holds only 2 per cent of the global AI computing power, while the USA and China have more than a hundred supercomputers each, many dedicated to AI use.

Among the fastest 500 supercomputers in the world, India has only 6, with our top-ranked machine, AIRAWAT, placed at only 136th position in terms of speed and performance. The result is that OpenAI's GPT-4, Anthropic's Claude, and Google's Gemini dominate global benchmarks, and US companies continue to release large-scale, general-purpose foundation models trained on vast amounts of data that can be adapted to a wide range of downstream tasks like translation, summarisation, question answering, image generation, etc.

They have access to unmatched compute, massive datasets, and cutting-edge chip designs. Even Chinese models like Baidu's Ernie 4.0 or Alibaba's Tongyi Qianwen rival Western large language models (LLMs) in Chinese language performance.

China's DeepSeek, offering cheaper, open-source, and quickly iterated variations, has jolted the US tech giants and greatly accelerated the race to the top, while in India, our efforts remain limited to tackling diverse local challenges in diagnostics, logistics, finance and governance, with AI startups building mostly language and domain-specific solutions.

India's LLMs like Sarvam, Krutrim, and BharatGPT focus on low-resource language inclusion, digital public infrastructure like Aadhaar, ONDC, UPI, and lower-cost compute and localisation, lagging in scale, benchmarks, and ecosystem maturity compared to the USA or China.

While the USA or China can leverage their AI advantages for economic expansion, global influence, space race and military superiority, we will remain trapped in a low-level equilibrium at great peril to our economy and national security. Lack of resources remains the major constraint.

According to the 2025 AI-Index published by Stanford University, global private venture capital funding for AI startups reached \$132 billion in 2024, of which the USA attracted \$109 billion of that, followed by China at \$9.3 billion and the UK at \$4.5 billion. India stood at the 12th spot with only \$1.2 billion in private AI investments. In total, from 2013 to 2024, India's cumulative private AI investment was \$11.29 billion — still less than what the US invested in a single year in 2024.

One reason behind the low investment is the risk-averse start-up mindset of domestic VC funds, which prefers quick solutions and returns over original innovation, which may carry a high risk of failure but also delivers much higher long-range returns. The other is the government's inability or unwillingness to increase R&D expenditure, which remains among the lowest in the world, at only 0.6 per cent of GDP, compared to 2.7 per cent for China and OECD countries, and over 3.4 per cent for the USA. Government Initiatives like IndiaAI Mission (2024) or our AI Strategy lack the boldness, scale and determination backed by resource commitment needed to compete with the frontrunners, while we continue to pour billions of dollars' worth of doles into highly wasteful and poorly targeted welfare schemes like food security. AI has already created a huge digital divide in the world, in which only a few countries today are appropriating all the benefits.

The divide is influencing not only geopolitics but also creating huge dependencies. We run the risk of getting excluded from a technology race that is shaping and defining our world if we do not urgently change our approach to become a contender rather than remaining a laggard forever.

<https://www.dailypioneer.com/2025/columnists/india---s-ai-dream-faces-a-hard-reality-check.html>

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Scientist who helped unravel mysteries of India's monsoon

Source: Hindustan Times, Dt. 26 Jul 2025

When she was a young woman in college, Sulochana Gadgil jumped out of a window of a classroom once to escape from a boring class. Math was her thing, so she decided not to take up engineering but focus on her first love. She eventually completed a master's degree in applied mathematics from Pune university. Degrees from Harvard and MIT followed.



Along the way, she fell in love with the dynamics of the monsoon, and applied math to it, focusing on variations in the monsoon. It is to Gadgil that we owe much of our understanding of this

variability to — hugely important in a country where nearly half of the cultivated area is rain-fed, with the Southwest Monsoon accounting for the bulk of it.

On Thursday night, Professor Sulochana Gadgil, whose work on the monsoon has inspired generations of climate scientists, died in Bengaluru. She was 81.

Gadgil was also a woman scientist at a time when it was not easy to be one. In her essay: “My tryst with the Monsoon”, part of “The Women Scientists of India”, a collection published by Indian Academy of Sciences in 2008, she writes: “Pune where I was born and brought up has for a century and a half been in the forefront of the struggle for the liberation of women...I am the third of four daughters. My parents encouraged us all to study and take to learned professions; two of my sisters are physicians. I also did well in school and college, so I was destined to become a professional!”

In the same essay, she wrote about her work.

“I have studied the ‘How and Why’ of monsoon variability, with analysis of conventional and satellite data and investigations of models of varying levels of complexity to understand the mechanisms responsible for important phenomena. I have worked on the formulation of the methodology for application of the knowledge and prediction of rainfall variability for farming strategies and also on modelling ecological and evolutionary phenomena...” .

Gadgil played an important role in establishing the Centre for Atmospheric and Oceanic Sciences at Bengaluru’s Indian Institute of Science.

“Dr. Sulochana Gadgil, who has just passed away, was one of India’s finest climate scientists. Her research over almost five decades greatly enhanced our understanding of the Indian monsoon. After her doctoral work at Harvard and post-doctoral work at MIT, she returned to the Indian Institute of Science, Bengaluru, in 1973 where she was to play a key role in establishing its Centre for Atmospheric and Oceanic Sciences,” Congress leader Jairam Ramesh wrote on X on Friday.

“Her life was devoted to advancing academic scholarship. At the same time, she was also a field scientist who investigated the practical relevance of her work, especially on farming systems in rain-fed areas. Her ability to communicate scientific research to the larger public was remarkable,” he added.

“She was doing a lot of monsoon related research on physics, predictability, variability of monsoon. Prof Gadgil was an expert on every aspect of monsoon, she even conducted field experiments related to agriculture. Young or old, whoever discussed the monsoon with her, she would explain things very enthusiastically,” said DS Pai, senior IMD scientist.

“It is with deep sorrow and a heavy heart that I share the news of the passing of Prof. Sulochana Gadgil (former Professor at IISc, Bangalore), who left us late last night after a prolonged illness. She was 81. She did her MSc in Mathematics from the University of Pune and Ph.D from Harvard University, USA. Prof. Sulochana was not only my teacher and mentor, but also a close and cherished friend. We had the privilege of working together on several seminal research papers on monsoon variability and prediction—collaborations that remain deeply meaningful to me. She was a true inspiration to generations of young scientists. Her unwavering commitment to research ethics, justice, and equality set her apart as both a scholar and a human being. We will miss her dearly,” wrote M Rajeevan, former secretary, ministry of earth sciences.

When Gadgil jumped out of the window, she attracted the attention of a fellow student who went on to become her friend, and later, husband. The man's name was Madhav Gadgil, and he would go on to become one of India's top ecologists.

"She was an outstanding personality in her own right. Even so it would not be out of place to mention that she and her husband — India's famed ecologist Madhav Gadgil— made a formidable duo who both individually and jointly mentored, guided, and inspired many," Ramesh added.

<https://www.hindustantimes.com/editors-pick/scientist-who-helped-unravel-mysteries-of-india-s-monsoon-101753586307545.html>

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बांस के रेशों से तैयार होंगे कंप्यूटर-मोबाइल फोन

Source: Jansatta, Dt. 28 Jul 2025

सर्वेश कुमार

नई दिल्ली, 27 जुलाई।

रिहायश के निर्माण से आगे 'बांस' का अब कंप्यूटर, मोबाइल फोन और कार विनिर्माण में भी इस्तेमाल करने की तैयारी है।

बांस की एक खास प्रजाति (बंबूसा तुल्दा) से एक पर्यावरण-अनुकूल सामग्री विकसित की है। प्राकृतिक रेशे से तैयार जैव-निम्नीकरणीय बहुलक मिश्रित सामग्री में कम नमी, तापीय स्थिरता, कम वजन और उच्च शक्ति जैसी खूबियों की बदौलत इस उपकरणों के इस्तेमाल किया जा सकेगा। कारों के पैनल, डैशबोर्ड ही नहीं अब कार की छत(रूप) बनाने सहित मोबाइल फोन और कंप्यूटर पैनल में इसका इस्तेमाल किया जा सकेगा। दुनिया की अग्रणी आटो कंपनियां

बीएमडब्ल्यू, फोर्ड, टोयोटा भी बांस, केले सहित प्राकृतिक रेशे (फाइबर) का उपकरणों के विनिर्माण में इस्तेमाल कर रही हैं।

भारतीय प्रौद्योगिकी संस्थान(गुवाहाटी) में प्रोफेसर पूनम कुमारी ने शोधकर्ताओं की मदद से पूर्वोत्तर भारत में बांस की एक खास प्रजाति के साथ वाली बांस की प्रजाति (बांबूसा तुल्दा) से जैव-निम्नीकरणीय पालिमेर के साथ मिलकर एक पर्यावरण-अनुकूल मिश्रित सामग्री विकसित की है। इसका इस्तेमाल वाहनों में इस्तेमाल होने वाले उपकरण जो अब तक दूसरे अधातु से बनाए जाते थे, उनके विकल्प के तौर पर किया जा सकता है। मैकेनिकल इंजीनियरिंग विभाग की प्रो पूनम ने कहा कि यह शोध न केवल प्लास्टिक कचरे की समस्या का समाधान करेगा बल्कि वाहन विनिर्माण उद्योग में हरित

उपकरणों की बढ़ती मांग को भी पूरा करने में सक्षम है। पर्यावरण अनुकूल होने की वजह से वाहन के छतों के निर्माण में भी इस्तेमाल किया जा सकता है। इस शोध के निष्कर्ष प्रतिष्ठित पत्रिका, पर्यावरण, विकास और स्थिरता (स्प्रिंगर नेचर) में प्रकाशित हुए हैं, जिसका सह-लेखन प्रोफेसर पूनम कुमारी ने शोधार्थी निखिल दिलीप कुलकर्णी और अबीर साह के साथ मिलकर किया।

शोधकर्ताओं ने बांस आधारित मिश्रित योगिक का परीक्षण किया जिनमें जैव या पेट्रोलियम आधारित एपाक्सी से प्रबलित बांस-तुल्दा रेशे भी शामिल थे। इन रेशों का प्रसंस्कृत करने के बाद इसकी गुणवत्ता (दृढ़ता, तापीय प्रतिरोध, जल अवशोषण, स्थायित्व और टिकाऊपन) में सुधार कर इस्तेमाल के लायक बनाया जाता है।

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The Tribune
The Statesman
ਪੰਜਾਬ ਕੇਸਰੀ ਜਨਸਤਾ
The Hindu
The Economic Times
Press Information Bureau
The Indian Express
The Times of India
Hindustan Times
नवभारत टाइम्स
दैनिक जागरण
The Asian Age
The Pioneer