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# समाचार पत्रों से चयित अंश Newspapers Clippings

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

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पत्र सूचना कार्यालय  
भारत सरकार

रक्षा मंत्रालय

*Fri, 04 March 2022 6:02PM*

### डीआरडीओ की विकसित एमएमआईसी का उपयोग ईओएस 04 में किया गया

रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) की विकसित मोनोलिथिक माइक्रोवेव इंटीग्रेटेड सर्किट (एमएमआईसी) का उपयोग ईओएस 04 के रडार इमेजिंग उपग्रह मॉड्यूल में किया गया है। इससे पहले 14 फरवरी, 2022 को भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) ने एमएमआईसी को लॉन्च किया था। वहीं, कई मोनोलिथिक माइक्रोवेव इंटीग्रेटेड सर्किट (एमएमआईसी) को डीआरडीओ की सॉलिड स्टेट फिजिक्स लेबोरेटरी (एसएसपीएल) और डीआरडीओ की फैक्ट्री (फाउन्ड्री) गैलियम आर्सेनाइड इनेबलिंग टेक्नोलॉजी सेंटर (जीईटीईसी) में डिजाइन/ विकसित और उत्पादित किया गया था।

इन एमएमआईसी का उपयोग करके रडार इमेजिंग के लिए पेलोड में प्रयुक्त टीआर-मॉड्यूल विकसित किए गए हैं। विभिन्न अंतरिक्ष अभियानों के लिए जीईटीईसी की फैक्ट्री में 30,000 से अधिक मॉड्यूल निर्मित किए गए हैं। यह उद्योग क्षेत्र के साझेदारों की ओर से प्राप्त समर्थन के साथ भारत सरकार के दो उन्नत प्रौद्योगिकी विभागों के बीच सहयोगात्मक उपलब्धि का एक उदाहरण है। स्वदेशी रूप से डिजाइन और विकसित एमएमआईसी का उपयोग आत्मनिर्भर भारत की दिशा में एक महत्वपूर्ण कदम है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1803040>



Press Information Bureau  
Government of India

Ministry of Defence

*Fri, 04 March 2022 6:02PM*

### DRDO Developed MMICs Onboard EOS 04

Defence Research and Development Organisation (DRDO) developed Monolithic Microwave Integrated Circuits (MMICs) have been used in radar imaging satellite modules of EOS 04, which

was launched by ISRO on 14th Feb 2022. Many of the Monolithic Microwave Integrated Circuits (MMIC) were designed/ developed and produced at Solid State Physics Laboratory (SSPL) DRDO and Gallium Arsenide Enabling Technology Centre (GAETEC) foundry of DRDO.

The TR-Modules used in the payload for Radar imaging have been developed using these MMICs. More than 30,000 modules have been produced at GAETEC foundry for various space missions. This is an example of collaborative achievement between two advanced technology departments of Government of India along with support of industry partners. The use of indigenously designed and developed MMICs is an important step towards Atmanibhar Bharat.

<https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1802981>



Sat, 05 March 2022

## भारतीय नौसेना ने INS चेन्नई से ब्रह्मोस मिसाइल के एडवांस वर्जन का किया सफल परीक्षण

भारतीय नौसेना ने शनिवार, 5 मार्च को आईएनएस चेन्नई (INS Chennai) से ब्रह्मोस मिसाइल के उन्नत संस्करण (Advanced Version Of BrahMos Missile) का सफलतापूर्वक परीक्षण किया है। ब्रह्मोस मिसाइल रूसी संघ एनपीओ माशिनोस्ट्रॉयेनिया और भारत के रक्षा अनुसंधान और विकास संगठन (DRDO) का एक संयुक्त उद्यम है, जिन्होंने मिलकर ब्रह्मोस एयरोस्पेस का गठन किया है। मिसाइल की लंबी दूरी की सटीक प्रहार क्षमता को हिट करने के लिए परीक्षण किया गया था। सफल परीक्षण के बाद भारतीय नौसेना ने कहा, "ब्रह्मोस मिसाइल के एडवांस वर्जन लंबी दूरी की सटीक स्ट्राइक क्षमता को सफलतापूर्वक हिट किया है।"

भारतीय नौसेना ने कहा है कि विस्तारित रेंज प्रक्षेपवक्र को पार करने और जटिल युद्धाभ्यास करने के बाद नया संस्करण अपने लक्ष्य को सटीकता के साथ हिट करेगा।

**भारतीय नौसेना ने कहा, "भारतीय नौसेना ने आज INS Chennai से एक विस्तारित दूरी की भूमि-हमले वाली ब्रह्मोस सुपरसोनिक क्रूज मिसाइल की सटीकता का सफलतापूर्वक प्रदर्शन किया। इसने एक विस्तारित रेंज प्रक्षेपवक्र और जटिल युद्धाभ्यास करने के बाद सटीकता के साथ अपने टारगेट को मार गिराया।"**

भारतीय नौसेना ने आगे कहा कि मिसाइल और इसे ले जाने वाला जहाज INS चेन्नई दोनों ही भारत में बने हैं और ये उपलब्धियां आत्मनिर्भर भारत के लिए भारतीय नौसेना के योगदान को बढ़ाती हैं।

*Long range precision strike capability of Adv version of #BrahMos missile successfully validated. Pin point destruction of tgt demonstrated combat & mission readiness of frontline platforms. Yet another shot in the arm for #AatmaNirbharBharat#IndianNavy #CombatReady & #Credible pic.twitter.com/NK13GoHwbB — SpokespersonNavy (@indiannavy) March 5, 2022*

भारतीय नौसेना ने कहा, "ब्रह्मोस मिसाइल और आईएनएस चेन्नई दोनों स्वदेशी रूप से निर्मित हैं और भारतीय मिसाइल और जहाज निर्माण कौशल की अत्याधुनिकता को उजागर करते हैं। वे

आत्मनिर्भर भारत और मेक इन इंडिया प्रयास के लिए भारतीय नौसेना के योगदान को सुदृढ़ करते हैं। यह उपलब्धि भारतीय नौसेना की क्षमता को स्थापित करती है।"

भारतीय नौसेना नियमित रूप से ब्रह्मोस का परीक्षण करती है, जो दुनिया की सबसे घातक क्रूज मिसाइलों में से एक है।

आत्मनिर्भर बनने के समय की आवश्यकता के बारे में बात करते हुए पीएम मोदी ने बजट के बाद एक वेबिनार को संबोधित करते हुए कहा कि जब तक आयातित हथियार और गोला-बारूद उन तक पहुंचता है तब तक हमारी रक्षा पुरानी हो जाती है। इसका स्वदेशी समाधान प्रदान करते हुए, पीएम मोदी ने कहा, "इसका समाधान 'आत्मनिर्भर भारत अभियान' और मेक इन इंडिया में है।" प्रधानमंत्री ने सूचना प्रौद्योगिकी के महत्व के साथ-साथ रक्षा में आईटी के उपयोग के बारे में बात करते हुए कहा कि हम अपने आईटी क्षेत्र को जितना मजबूत करेंगे और इसकी शक्ति का उपयोग करेंगे, हमारा रक्षा क्षेत्र उतना ही "आश्वासित" होगा।

आत्मनिर्भरता के महत्व पर जोर देते हुए प्रधानमंत्री ने जोर देकर कहा कि जो देश अपने गोला-बारूद का निर्माण नहीं करता है, उसके पास युद्ध के मैदान में 'विशिष्टता' और 'आश्चर्यजनक तत्व' की कमी है। इतिहास का सबक देते हुए पीएम मोदी ने कहा, "ब्रिटिश शासन के दौरान और स्वतंत्रता के ठीक बाद, हमारी रक्षा निर्माण शक्ति बहुत अधिक थी। द्वितीय विश्व युद्ध में, भारत में निर्मित हथियारों ने एक प्रमुख भूमिका निभाई। हालांकि, बाद के वर्षों में यह ताकत कमजोर हुआ लेकिन इससे पता चलता है कि भारत के पास क्षमताओं की कभी कमी नहीं थी।"

<https://bharat.republicworld.com/india-news/general-news/indian-navy-successfully-tests-advanced-version-of-brahmos-missile-from-ins-chennai>

**TIMES NOW**

*Sun, 06 March 2022*

### **Indian Navy test-fires advanced version of BrahMos missile**

In a tweet, the Indian Navy said the test-firing validated the long-range precision strike capability of the BrahMos missile. BrahMos is a Joint Venture between India (DRDO) and Russia (NPOM) for the development, production and marketing of the supersonic cruise missile. BrahMos is the potent offensive missile weapon system already inducted into the Armed Forces.



Indian Navy test fires advanced version of BrahMos missile I @IndianNavy (Photo : Twitter)

The Indian Navy on Saturday successfully test-fired a long-range version of the BrahMos supersonic cruise missile from a stealth destroyer in the Indian Ocean. In a tweet, the Navy said the test-firing validated the long-range precision strike capability of the BrahMos missile, terming it "another shot in the arm for *Aatmanirbhar Bharat*".

"Long range precision strike capability of advanced version of BrahMos missile successfully validated. Pin point destruction of target demonstrated combat and mission readiness of frontline platforms. Yet another shot in the arm for *Aatmanirbhar Bharat*," it tweeted.

It also said the missile hit its intended target with pinpoint accuracy after traversing an extended range trajectory and performing complex manoeuvres. The missile was test-fired from stealth destroyer INS Chennai.

"The Indian Navy successfully demonstrated the accuracy of an extended-range land-attack Brahmos supersonic cruise missile from the stealth destroyer INS Chennai," the Navy said.

"This achievement establishes the Indian Navy's ability to strike even deeper and influence land operations further away from the sea, when and where required," it said.

It said both Brahmos missile and INS Chennai are indigenously built and highlight the cutting-edge of Indian missile and ship-building prowess. "They reinforce the Indian Navy's contribution towards the *Atmanirbhar Bharat* and *Make in India* endeavours," the Navy said in a statement.

In a video shared by the Navy, the missile can be seen being launched from a warship.

Long range precision strike capability of Adv version of #BrahMos missile successfully validated. Pin point destruc... t.co/k7ojtHplcz

— ANI (@ANI) Mar 5, 2022

BrahMos Aerospace, a joint venture between India (DRDO) and Russia (NPOM), develops, produces and does marketing of the supersonic cruise missile that can be launched from submarines, ships, aircraft, or land platforms.

BrahMos Aerospace has been continuously upgrading the powerful, highly versatile BrahMos to increase its effectiveness and lethality against sea and land targets.

BrahMos is the potent missile weapon system already inducted into the armed forces. The missile flies at a speed of 2.8 Mach or almost three times the speed of sound. The range of the advanced version of the missile is learnt to have been extended to around 350 km from the original 290 km.

In 2017, the air-launched variant of the BrahMos was successfully test-fired from a Sukhoi-30MKI.

<https://www.timesnownews.com/india/indian-navy-successfully-test-fires-advanced-version-of-brahmos-missile-video-article-90012011>

## Defence News

## Defence Strategic: National/International

 Hindustan Times

Mon, 07 March 2022

### Defence exports in focus as India speeds up approvals

India's defence exports have recorded nearly a six-fold increase between 2017 and 2021, growing from ₹1,520 crore to ₹8,435 crore.

In what reflects India's sharpened focus on getting a toehold in foreign defence markets, the government granted close to a thousand export authorisations last year, nearly four times the number approved five years ago, and cut down the time for such approvals by a third between 2017 and 2021, officials familiar with developments said.

The defence ministry issued 954 export authorisations for different weapons and sub-systems in 2021, compared to 829 in 2020, 668 in 2019, 288 in 2018 and 254 in 2017, the officials said, attributing to the nearly four-fold increase to the government's export-friendly policies to tap new markets.

During the same time period, the average time taken for issuing export approvals came down from 86 days in 2017 to 35 days last year, added the officials mentioned above.

India's defence exports have recorded nearly a six-fold increase between 2017 and 2021, growing from ₹1,520 crore to ₹8,435 crore.

Defence items being exported by India include missiles, the advanced light helicopter, offshore patrol vessels, personal protective gear, surveillance systems and a variety of radars.

In January, India's BrahMos Aerospace and the Philippines signed a deal worth almost \$375 million for the Philippine Marines to acquire three batteries of the BrahMos cruise missile, a shot in the arm for New Delhi's efforts to emerge as an exporter of major defence hardware.

"India is poised to expand its footprint in foreign defence markets. The world has taken note of the BrahMos deal. And several other Asian and African countries could be potential buyers of the missile. There are several other indigenous platforms that hold good export potential," said Air Marshal Anil Chopra (retd), director general, Centre for Air Power Studies.

The military hardware that holds export potential includes the light combat aircraft, Astra beyond-visual-range air-to-air missile, Akash surface-to-air missile system, tanks, sonars and radars, as previously reported by HT.

In December 2020, the Union Cabinet, headed by Prime Minister Narendra Modi, gave its go-ahead to the sale of Akash missile systems to friendly foreign countries. It also created a high-powered panel for swifter approvals to export of military hardware. India has set a target of clocking defence exports worth \$5 billion by 2024.

The focus on boosting exports comes along with a renewed thrust on indigenisation of weapons and systems.

On February 25, the PM said customisation and uniqueness of military hardware was critical to hold the advantage of surprise over India's adversaries, and that this can be achieved only if weapons and systems are developed in the country. He also said India was providing 'Made in India' defence equipment and services to more than 75 countries.

India will soon notify a new list of weapons and systems that cannot be imported. This will be the third positive indigenisation list -- the government has already notified two such lists of 209 weapons and equipment.

These include artillery guns, missile destroyers, ship-borne cruise missiles, light combat aircraft, light transport aircraft, long-range land-attack cruise missiles, basic trainer aircraft, multi-barrel rocket launchers, assault rifles, sniper rifles, mini-UAVs, specified types of helicopters, next-generation corvettes, airborne early warning and Control (AEW&C) systems, tank engines and medium-range surface to air missile systems.

<https://www.hindustantimes.com/india-news/defence-exports-in-focus-as-india-speeds-up-approvals-101646589839821.html>



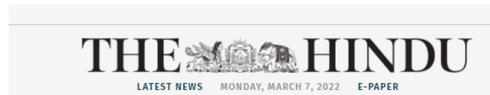
## Defence manufacturing in Gujarat gets shot in the arm

Already a preferred investment destination due to its entrepreneurial spirit and sound manufacturing base, Gujarat is on its way to developing a defence manufacturing ecosystem.

While defence manufacturers from across the globe are looking to invest here, Gujarat already has a few manufacturers and startups supplying a range of technology products to defence manufacturers, the Indian Army, the Defence Research and Development Organisation (DRDO) and others.

The state has thus far received Rs 292 crore investment in direct defence manufacturing with companies such as Larsen and Toubro, Jaivel Aerospace, Unique Forge (Gujarat) and Pushpak Aerospace operating here. It is also home to at least 100 micro, small and medium enterprises (MSMEs) that supply components and parts to aerospace and defence original equipment manufacturers (OEMs).

<https://timesofindia.indiatimes.com/city/ahmedabad/defence-manufacturing-in-gujarat-gets-shot-in-the-arm/articleshow/90041282.cms>



Sun, 06 March 2022

## Amit Shah moots hybrid security model under CISF's guidance

**The Union Home Minister asks the force to prepare a 25-year road map to emerge as "result-oriented"**

Union Home Minister Amit Shah on Sunday pitched for a "hybrid" security model where the Central Industrial Security Force (CISF) could train and certify private security agencies so that they can take over the task of efficiently guarding various kinds of industrial and manufacturing units in the country.

He said the CISF, raised in 1969, worked like a silent "karmayogi" to ensure the country's industrial development and secured the private manufacturing production units as India rode on to become a \$2.5 trillion-strong economy.

In the country's journey from a \$2.5 trillion economy to becoming a \$5 trillion economy, many units in the manufacturing sector will be established and the CISF will face new scenarios, the Home Minister added.

Without elaborating, he said the about 1.64-lakh-personnel-strong force could soon see an enhancement in its role.

Mr. Shah was speaking at the 53rd Raising Day celebrations of the CISF in Ghaziabad.

"The work of private security agencies is rapidly increasing...we have brought out rules and regulations for their functioning. Can the CISF take the responsibility of training these private security agencies?" he asked.

"Can we prepare some model for say, a private manufacturing unit, that employs between 1,000 and 5,000 staff? We will have to enhance the efficiency of the private security agencies as the CISF alone cannot render the task of securing the industrial and manufacturing units of the country," he said.



The Home Minister said he believes that it is part of the CISF's work to ensure that all the agencies involved in industrial security are as efficient as the force in securing the sector.

A hybrid model of security, where the CISF will prepare the strategy and where both private and the CISF personnel can work, can be developed so that the paramilitary force can gradually come out and hand over these tasks to private security agencies, he added.

The force, at present, guards a total of 354 units in the government and private sectors, working in domains such as oil, power, information technology, civil airports, Delhi Metro, aerospace and nuclear, among others.

Mr. Shah asked the force to "aggressively" enhance its approach in guarding private sector entities, saying the present 11 being secured by it is less.

The Infosys campuses in Mysuru, Bengaluru and Pune, the Patanjali Food and Herbal Park in Haridwar and the Reliance refinery in Gujarat's Jamnagar are among the private sector establishments under the CISF cover at present.

Mr. Shah also asked the force to prepare a 25-year road map so that it can emerge as a "result-oriented" security agency by the time India enters the 100th year of its independence.

Keeping in view the "increasing" drone threat to industrial units along sea ports and the land border, he asked the CISF to collaborate with agencies like the Defence Research and Development Organisation (DRDO) and the Border Security Force (BSF) to prepare an effective counter-technology against this menace.

He said the CISF personnel deployed at various airports are also part of "Operation Ganga", under which Indians are being evacuated from war-hit Ukraine on special flights.

"I find the CISF personnel welcoming the Indians with very polite and nice behaviour," the Home Minister said.

He also urged the CISF to explore ways so that the representation of women personnel in the force could be enhanced from the present six per cent to 20%.

Speaking at the event, CISF Director General (DG) Sheel Vardhan Singh said the force can play a big and important role in the training and certification of the private security agencies in the country, which are currently functioning in an unorganised manner.

He said the force is ready to play the role of a "specialist and integrated" security agency in the airport and seaport cargo, counter-drone, marine and rapid transport system domains.

The CISF currently guards 65 civil airports in the country, apart from securing a number of vital infrastructure in both the government and private domains. It functions under the Union Home Ministry.

<https://www.thehindu.com/news/national/cisf-should-develop-hybrid-security-model-to-train-certify-private-security-agencies-amit-shah/article65198673.ece>



*Mon, 07 March 2022*

## **BSF shoots down Pak drone carrying contraband in Punjab's Ferozpur**

*The BSF also said that the suspected flying object was a quadcopter made by DJI Matrice 300 RTX*

The Border Security Force (BSF) on Monday said that its alert troops shot down a drone which came from the Pakistan side in Punjab's Ferozpur sector.

According to the BSF officials, the forward deployed troopers heard the humming sound of a suspicious flying object around 0255 hours coming from the Pakistani side to India side in the

Ferozpur sector. Immediately all the troopers were alerted and they fired on the flying object and also illuminated the area by firing para bombs and the drone was shot down.

The BSF personnel found that a small bag (green coloured) was attached to the drone which contained four packets in yellow wrapping and one small packet in black colour wrapping was recovered. It is suspected to be contraband.

The gross weight of the contraband items was found to be around 4.17 kgs (with packing material) and of 250 gm of black colour wrapping.

The BSF also said that the suspected flying object was a quadcopter made by DJI Matrice 300 RTX.

This is not the first time that the hostile neighbour has tried to send contraband into Punjab and Jammu sectors.

India's border guarding force has been working on anti- drone technology in collaboration with the Defence Ministry research wing DRDO and soon will have the anti- drone technology to prevent the entry of quadcopter into the Indian Territory from the Pakistan side.

In the past too, the BSF shot down a drone in Jammu sector, which was carrying arms and ammunition whereas in Punjab sector, the flying quadcopters were used to smuggle drugs and narcotics.

<https://www.deccanherald.com/national/north-and-central/bsf-shoots-down-pak-drone-carrying-contraband-in-punjab-ferozpur-1088742.html>

## EastMojo

Sat, 05 March 2022

### **Indian Air Force and the numbers game: How much is enough?**

*Amongst the IAF leadership, the size of the fighter fleet in the air force is not just a strategic concern, it is a deeply emotive issue as well.*

*By Ajay Ahlawat*

The size of the fighter fleet in the Indian Air force (IAF) was always a major subject of discussion amongst the strategic community. The general public was largely ignorant or indifferent towards the issue. However, of late, there is a growing awareness, as well as inquisitiveness. among the people, especially the young, about the numbers and the capability of the IAF fighter fleet.

This trend can be identified with increasing numbers of blogs, articles, and opinion pieces written by non-military enthusiasts, appearing on various media platforms. On social media, the rising number of Quora submissions, Facebook posts, Google searches etc indicate that this subject has found favour with a wider audience.

The arrival of Rafale jets was followed with a frenzy, the landing of jets on highways was showcased live on national media, Republic day flypast by 75 aircraft was a major news item and more recently a video of LCA Tejas performing air-display at Singapore air show garnered over ten thousand likes within minutes. Citizenry getting involved in the military's strength, capability and adequacy is always a good sign in a democracy.

Increasing awareness also leads to greater curiosity and some discussions which were heretofore confined to military circles, are being discussed in open forums. One such question that gets asked often is: is IAF equipped with an adequate number of fighter squadrons? This paper would reflect on this question.

Amongst the IAF leadership, the size of the fighter fleet in the air force is not just a strategic concern, it is a deeply emotive issue as well. Overwhelmingly manned by fighter pilots, the IAF brass would literally bleed blue before it allows fighter squadrons to dwindle to dangerously low levels. At this juncture, constrained by the rising cost of acquisitions and dwindling budgetary

allotments, the IAF is focused on the enhanced induction of locally manufactured LCA. However, the brass has not given up on the proposal to induct 114 fighter jets from abroad. Such large procurements, even though prohibitively expensive, are an inescapable requirement.

Right now, a large number of fighters are being kept in operational condition, well beyond their service life, to ensure that the air force retains the numbers as close to the sanctioned strength.

The sanctioned fleet size, as understood by the IAF is 42 Squadrons (Sqn). Some mandarins in the civil-services dominated MoD put this number as 39.5 Sqn. There is no single document giving out this number; rather, it has to be inferred from a clutch of classified and non-classified papers. The origin of this debate can be traced to a committee constituted by the Government of India (GoI) in the early 1960s. The committee was headed by Air Vice Marshal (honorary) JRD Tata, the doyen of Indian aviation. The team was asked to determine the number of Sqns the IAF would need to fulfil the mandate. The threat at that time was from Pakistan, East Pakistan and China. The committee recommended a much higher number, but the government settled at a much more affordable 42 Sqns.

Over the last six decades, the capabilities of our adversaries have changed, with China becoming a relatively greater power and Pakistan having lost the technical edge it enjoyed in the early years. The creation of Bangladesh eliminated the Pakistani threat from the east. The capabilities of modern fighter jets in terms of range, reach, and payload has changed over the years.

A single Rafale or Su-30 can do more than a few Vampires or Tempest could do. We also have newer weapons: long-range surface-to-air missiles (SAM), remotely-piloted vehicles (RPA), armed drones, surface-to-surface missiles and armed/attack helicopters that can undertake certain roles that were heretofore carried out by fighter aircraft.

Notwithstanding, the number 42 is sacrosanct for IAF. Each Air Chief since the report came out has put his faith in 42, 'the minimum we need'.

For comparison's sake, Pakistan has around 500 fighters and China can field 2500 jets. Right now we have 33 Sqns (approximately). With each Sqn fielding 18-20 aircraft, we have a fighter fleet of 600 (approximately). In addition, Hawk AJT can also perform a limited operational role in certain conditions. With nearly 100 Hawks in the fleet, we have a reasonably good plan B.

These numbers, to my mind, should be adequate to meet the requirement of dissuasive deterrence to the east/north and punitive ability to the west. However, these would be grossly inadequate in case of collusive threats from both adversaries. We would require a fighter fleet comprising of modern jets in adequate numbers if we are to manage a two-front situation. In my opinion '42' will not be enough. However, I also feel that it would be foolish to manage a two-front threat by the military alone, we will go bankrupt in the process. To counter a two-front situation, we need international alliances.

Even if we try to increase the fleet size, there are significant headwinds. I will list the two most prominent reasons.

1. Despite what the IAF wants, and even with a supportive government, there are significant challenges to increasing these numbers. The first reason is lack of money. At this juncture, the IAF is struggling even to meet committed liabilities. There is not enough in the Capital code head to meet existing payments. The situation is so dire that the payment due to PSUs has been pushed back by a few years.

2. Our taxpayer-funded domestic defence industry is notorious for over-promise and under-delivery. In an article published in Print in March 2018, Shekhar Gupta called DRDO a 'banana republic'. His argument was- "Because whenever the armed forces ask for a new weapon system, the DRDO would say, humko yeh banana hai, humne yeh banaya hai, hum yeh bana sakte hain (we should make this, we have already made this, we can make this) and so on...". The much-touted success of made-in-India Su 30 has come at a considerable cost to the taxpayer.

We paid \$ 30 million to import one Su-30 in 2000 and paid over \$100 million to HAL to make one in India. The LCA (Tejas) was formally inducted into the IAF on 10 Jan 2011. Ten years later, we are yet to field one complete Sqn in FOC configuration. Ludicrous as it may sound, the HAL chief has promised roll out of LCA Mk-II by September next year and production starting in 2025.

The Government is not unaware but has to manage many other expectations. Despite shortcomings in the domestic industry, the route to great power status runs through indigenous capability. The IAF could do a critical in-house analysis and see if it needs to stick to the number '42', because it is unlikely that the GoI would allow IAF to import any more fighter jets in the next decade or so. A reasonable course of action would be to upgrade the existing fleet to extend the life of the ageing platforms, while we wait for the DRDO/HAL to fulfil their promises.

<https://www.eastmojo.com/opinion/2022/03/05/the-number-game/>



*Sat, 05 March 2022*

## **India pitches with France to become Rafale maintenance hub**

India has pitched with France to become a hub for maintenance, repair, and overhaul (MRO) for Rafale fighter jets.

This comes even as last month Indonesia entered into a deal with France to buy 42 Rafale Jets and UAE signed a deal to buy 80 of the fighter jets In December 2021.

India had signed a deal with France in 2016 to get 36 Rafale jets, of which 33 have been delivered. This makes countries in the region have these France made fighter jets.

The Indian proposal comes amid the government's Atmanirbhar Bharat policy under which local manufacturing of defense equipment has been the focus. During the visit of French Defence Minister Florence Parly, both sides had discussed joint manufacture of aero engines in India.

At an event of an Industry chamber, Defence Minister Rajnath Singh had announced that "a big French company will manufacture an engine in India...in collaboration with an Indian company".

India and France have a robust defense relationship, from annual ministerial-level defence dialogue to regular defense exercises of the three services. The Indian Navy also participated in the French-led La Pérouse exercise, along with other Quad members from 5 to 7 April 2021.

And not just for French Rafales, India is focusing on Jewar-Noida International Airport to be a large MRO hub. Indian Prime Minister Narendra Modi had laid the foundation of the airport in a grand ceremony in November 2021. It is touted to become India's largest airport.

<https://www.wionews.com/india-news/india-pitches-with-france-to-become-rafale-maintenance-hub-459373>



*Mon, 07 March 2022*

## **Russia-Ukraine conflict: A wake-up call for India to bolster its military AI capabilities**

**According to reports, Russia is suspected to be behind these attacks. There is a high likelihood that AI was used in this attack, and more such attacks might very well follow.**

*By Dr (Prof) NishaKant Ojha*

As tensions rise between Russia and Ukraine, all eyes are on the movement of troops – both on land and air. But there's one thing that, while noticed, did not get the attention it deserved. Just last

week, Ukraine suffered a massive cyber-attack that brought down the websites of major banks, its army and defence ministries.

According to reports, Russia is suspected to be behind these attacks. There is a high likelihood that AI was used in this attack, and more such attacks might very well follow. Countries like India, which are now focusing on using more and more interconnected equipment for enhancing their defence capabilities, need to be especially vigilant, considering it is surrounded by neighbours such as China, Pakistan which are known to have the tacit or indirect support of Russia.

Just two weeks ago, news reports indicated that officials from the defence establishment, which includes the Army, Navy, IAF and DRDO, will be focusing on artificial intelligence for faster decision making, better surveillance and more advanced weapon systems. This is a step in the right direction, but India needs to do more.

### **How AI is increasing vulnerabilities**

When it comes to building a prosperous nation based on knowledge and the enhancing value of human life, AI technologies are crucial. Unfortunately, however, AI is widening the vulnerability window of our defence systems and borders.

During the conflict between Armenia and Azerbaijan last year, one of the biggest game-changers that helped Azerbaijan gain an advantage was the use of drones. These drones are autonomous, equipped with artificial intelligence and have very deep surveillance capabilities. It was the Turkish military that provided this kind of aerial support to Azerbaijan. Since Azerbaijan did not have to use its planes and manpower in these attacks, they gained morale and were able to inflict more severe damage. This was a watershed moment in the area of warfare.

According to reports, Turkish made Kargu-2 drones can actually attack human targets by recognising their face. These drones have advanced cameras and are equipped with artificial intelligence-based facial recognition software that can be used to mount attacks without the need for human intervention at all. It is a double-edged sword – On one hand, they will reduce civilian casualties, and on the other hand, assassination attempts of the future will likely make use of such technology. Allegedly, these drones were used by Turkey in Libya to attack human targets.

The growing closeness between Turkey and China should be of concern to India, especially because this means that China and Turkey can and do share military capabilities with each other, which puts India at risk. Last year, the drone attack on the Indian Air Force base in Jammu was a warning call for India to take the threats of artificial intelligence and drones more seriously.

Without pervasive AI capabilities and new war fighting paradigms, we will be unable to defend against AI-enabled attacks. Therefore, we need to broaden our understanding of national security and develop AI-enabled solutions.

Many countries are already taking several steps in this direction.

### **The international AI arms race**

The United States Pentagon has set up a Joint Artificial Intelligence Centre, which is tasked with helping the US military make use of artificial intelligence. In fact, last year, there were reports that the Centre will try to strengthen its AI systems by hacking itself.

The British Army has used an artificial intelligence-based engine that gives data about the environment and terrain. They will also be using AI to predict enemy behaviour, transmit real-time intelligence and do reconnaissance.

Last year, there were reports that the Indian military would send 100 personnel to the US so as to train them on cyber security and artificial intelligence. India needs to make better use of its alliances and friendships with countries such as the United States, UK, Australia and Germany, which are at the forefront of advanced AI military technology.

In fact, there are also several start-ups in India that have homegrown solutions for AI attacks, whether physical or virtual. India should explore partnerships with such start-ups to bolster its safety and security further.

This also means India should start divesting from traditional military systems and spend more on next-generation capabilities.

Although we're late to the party, technologies like these are now advanced enough to be deployed very quickly. This will help India deal effectively with the threats of its belligerent neighbours.

<https://www.financialexpress.com/defence/russia-ukraine-conflict-a-wake-up-call-for-india-to-bolster-its-military-ai-capabilities/2452527/>



*Sun, 06 March 2022*

## **Will Russia-Ukraine war impact India's defence imports? Delivery of orders worth \$9 billion still pending**

In the wake of the Ukraine crisis, India is keeping a close eye on its defence imports from Russia. Here's a look at how India's defence imports from Russia have fallen in recent years.

### **• Highlights**

- India's arms imports have dropped by over 30 per cent over the last decade
- India is pursuing a policy of targeting defence exports worth Rs 35,000 crore by 2025
- India signed a \$5 billion deal with Russia in Oct 2018 for five units of the S-400 missile system

The Russia-Ukraine conflict has emerged as one of the greatest challenges facing the world. It has forced many countries to either impose sanctions on or limit bilateral ties with Russia, which goes on to prove that the Russian invasion of Ukraine could have long-term repercussions.

India, too, is keeping a close watch on its defence requirements sourced from Russia.

While both Indian and Russian officials have stated that the crisis will not impact or delay deliveries of defence equipment, concerns persist about sanctions on Russia and the possibility of a prolonged war in Ukraine.

In fact, reviews are being conducted by the defence establishment to ascertain the status of current deals and payments.

It is also important to note that, apart from Russia, India is expecting deliveries of imported arms from a number of other suppliers in the coming years.

### **Drop in Russian arms imports**

Over the last decade, India's arms imports have dropped by over 30 per cent. This decrease was attributed to a number of reasons, including reduced dependence on Russia. But Moscow still supplies a large chunk of spares and other military platforms to India.

The drop in Indian arms imports seems to have been mainly due to its complex procurement processes, combined with an attempt to reduce its dependence on Russian arms, reads a report from last year by SIPRI on international arms transfers.

Stockholm International Peace Research Institute (SIPRI) is an international think-tank that studies conflict, armaments, arms control and disarmament.



“The overall decrease in Russia’s arms exports from 2011-15 and 2016-20 was almost entirely attributable to a 53 per cent drop in its arms exports to India,” read the report. As a result, Russia’s share of total Indian arms imports fell from 70 to 49 per cent.

However, India was still seen as the largest buyer of Russian defence equipment between 2016 and 2020 despite the decreased dependence on imports from Russia.



## INDIGENOUS WEAPON ARSENAL

Major weapons, military equipment developed by DRDO for Indian armed forces

 <p><b>Astra Beyond Visual Range Missile System</b></p>	<p>10m Short Span Bridging System</p> <hr style="border-top: 1px dashed black;"/> <p>Indian Maritime Situational Awareness System (IMSAS)</p>	<p>Heavy Weight Torpedo (HWT) Varunastra</p> <hr style="border-top: 1px dashed black;"/> <p>Border Surveillance System (BOSS)</p>	 <p><b>Arjun Mk-1A</b></p>
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## WEAPONS, MILITARY EQUIPMENT DEVELOPED LAST YEAR

<p>Advanced Towed Artillery Gun System (ATAGS)</p> <hr style="border-top: 1px dashed black;"/> <p>Extended Range Pinaka System &amp; Guided Pinaka Rocket System</p>	 <p><b>Heavy Weight Torpedo (HWT) Varunastra</b></p>	<p>Indian Maritime Situational Awareness System (IMSAS)</p> <hr style="border-top: 1px dashed black;"/> <p>Border Surveillance System (BOSS)</p>	<p>10m Short Span Bridging System</p> <hr style="border-top: 1px dashed black;"/> <p>Arjun Mk-1A</p>
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Source: Lok Sabha 

### China-Pakistan threat

The SIPRI report went on to add, “Although several large Russian arms deals with India, including for combat aircraft, were completed by 2020, India placed new orders for a variety of Russian arms in 2019-20. The ensuing deliveries will probably lead to an increase in Russian arms exports in the coming five years.”

India has been looking at large scale arms deals in the wake of the threat perception that has developed over the last two years involving China and Pakistan. While there is a constant thrust on ‘Make in India’, big-ticket military imports are imminent.

“Based on its outstanding deliveries of combat aircraft, air defence systems, ships and submarines, India’s arms imports are expected to increase over the coming five years,” SIPRI said in its report.

In order to be able to balance this equation, India is pursuing a policy of targeting defence exports worth Rs 35,000 crore by 2025. This can be done by doubling procurement from domestic manufacturers, thereby decreasing the dependence of the Indian armed forces on foreign weapons and military platforms.

Reports also point out that while India’s defence imports from Russia fell considerably over the last decade, the import of American arms also fell by 46 per cent in the same period.

### S-400 import deal with Russia

India and Russia signed the military tech cooperation agreement 2021-2031 during the maiden 2+2 dialogue in December 2021. This agreement was aimed at bolstering defence ties over the next decade and comprises orders for military platforms worth over \$9 billion.

One of the most significant military deals India made with Russia is that of the S-400 air defence system. India signed a \$5 billion deal with Russia in October 2018 to buy five units of the S-400



surface to air missile system. Out of the five units, one has already been delivered to the Indian Air Force (IAF).

The S-400 is a mobile long-range surface-to-air missile system that is considered one of the most lethal in the world. It can take down multiple targets, including fighter jets, bombers, cruise and ballistic missiles or even unmanned aerial vehicles (UAVs), up to a range of 400 km.

With its long-range surveillance radars, the S-400 can detect all sorts of aerial threats and provide an air defence shield over large cities.

### **BrahMos export order to Philippines**

A joint venture between India's DRDO and Russia, BrahMos Aerospace inked a \$375 million deal with the Philippines to supply BrahMos cruise missiles to the Filipino navy. These will then be used as anti-ship shore-based missiles with a range of 290 km.

BrahMos Aerospace has been continuously upgrading the BrahMos missile system, making it more lethal against sea and land targets. It can be launched from submarines, ships, aircraft or land platforms.

This missile weapon system is already being used in different variants by the Army, Air Force and Navy.

### **AK-203 assault rifle**

As part of a joint venture between India and Russia, over 6 lakh AK-203 rifles were to be produced in a factory in Korwa in Uttar Pradesh's Amethi to fulfill the Indian army's demand for assault rifles.

This 'Make in India' project faced multiple delays but all hurdles have now been cleared.

The Rs 5,000 crore contract involves the procurement of 6,01,427 AK-203 assault rifles through Indo-Russia Rifles Private Limited. These rifles are to be manufactured in India. In addition, the contract also involves off the shelf procurement of another 70,000 AK-203 assault rifles from Russia.

### **Nuclear powered submarine**

In 2019, India signed a \$3 billion deal with Russia to lease a nuclear-powered submarine.

The Chakra III, Akula class submarine, is expected to be delivered by 2025 for a period of 10 years. This will be the third nuclear submarine India would lease from Russia.

The first was leased in 1988 for three years and the second in 2012 for 10 years. The lease for the second submarine is due to end this year.

### **Four Grigorovich class frigates**

In 2018, Russia's state-run arms exporter Rosoboronexport inked a \$1 billion deal with Goa Shipyard Ltd for the production of two frigates for the Indian Navy.

Delivery of the two frigates was supposed to begin within four years of the contract, which means by the end of 2022.

### **Fighter jets**

At the peak of its military tussle with China in Ladakh in July 2020, India approved the purchase of 12 Su-30 MKIs and 21 MiG 29 fighter aircraft from Russia. This Rs 18,148 crore deal also involved an upgrade of IAF's existing fleet of 59 Russian MiG 29s.

US Assistant Secretary of State for South and Central Asian Affairs Donald Lu had claimed that India has cancelled the order of Russian-made MiG 29 aircraft. However, Indian officials did not react to such claims.

A spokesperson for the Russian Federal Service for Military-Technical Cooperation - Valeria Reshetnikova, said in July 2021 that Russia had sent a commercial offer and a tender request for the aircraft.

<https://www.indiatoday.in/india/story/russia-ukraine-war-india-defence-import-orders-pending-1921374-2022-03-06>

*Sun, 06 March 2022*

## **Milrem Robotics and MSI-Defence Systems Present Robotic C-UAV Capabilities at the World Defense Show**

The jointly developed system comprising of Milrem Robotics' THeMIS unmanned ground vehicle (UGV) integrated with MSI-DSL's Remote Weapon System (RWS) and Electrical Optical Sensor System offer a step-change in countering mini-UAV, loitering munitions or other small difficult to detect airborne targets for both deployed assets and critical infrastructure.

RIYADH, Saudi Arabia--(BUSINESS WIRE)--MSI-Defence Systems Limited (MSI-DSL), the developer of leading-edge weapon and underwater systems and the European leading robotics and autonomous system developer Milrem Robotics jointly present highly mobile, unmanned kinetic C-UAV capabilities at the World Defense Show.

"Utilizing unmanned ground systems with intelligent functions to counter these new threats helps increase force protection, provide flexibility to tactical units to engage aerial and land targets, and ultimately reduce loss of life"

"There has been an increase in the usage of drones and loitering munition against various military targets. The employment of this type of equipment has made low-level conflicts more lethal," explained Captain (res) Jüri Pajuste, Defence Research and Development Director at Milrem Robotics. "Utilizing unmanned ground systems with intelligent functions to counter these new threats helps increase force protection, provide flexibility to tactical units to engage aerial and land targets, and ultimately reduce loss of life," Pajuste added.

The jointly developed system comprising of Milrem Robotics' THeMIS unmanned ground vehicle (UGV) integrated with MSI-DSL's Remote Weapon System and Electrical Optical Sensor System offers a step change in countering mini-UAV, loitering munitions or other small difficult to detect airborne targets for both deployed assets and critical infrastructure.

"MSI-DSL and Milrem are committed to providing 'cutting edge' capabilities to the operator providing a highly deployable system with unique lethality and survivability. The autonomous nature of the system enables the operator to Sense, Identify, Decide and Effect over a wide area without placing the operator in areas of undue risk," said Brigadier Haydn White RM (Ret), Senior Military Adviser at MSI-DSL.

THeMIS Combat UGVs equipped with MIFIK (Milrem's Intelligent Functions Kit) offer follow-me, return home, and point-to-point navigation functionalities that considerably enhance the fighting capability of units.

The highly mobile, unmanned C-UAS systems can carry payloads from 7.62 to 30 mm including the Northrop Grumman M230 cannon and Thales LMM missiles. It will be able to find and engage larger air threats as well as ground targets, even if armoured. All without the operator being exposed to threats.

The system is exhibited at the World Defense Show in Riyadh March 6-9 in the Estonian Pavilion H9. Another THeMIS Transport is demonstrated in the outdoor area and stand number CY-Z.

Milrem Robotics is the European leading robotics and autonomous systems developer and systems integrator. Its flagship product, the THeMIS UGV has already been acquired by 12 countries, including several NATO members.

MSI-Defence Systems is a world-leader in the supply of small/medium calibre Gun Systems.

<https://www.businesswire.com/news/home/20220303005614/en/Milrem-Robotics-and-MSI-Defence-Systems-Present-Robotic-C-UAV-Capabilities-at-the-World-Defense-Show>

### **China hikes defence budget to USD 230 billion**

Last year, China's defence spending for the first time crossed USD 200 billion. In 2021, the defence budget grew by 6.8 per cent to USD 209 billion.

China on Saturday hiked its annual defence budget by 7.1 per cent to USD 230 billion from last year's USD 209 billion.

The Chinese government has proposed the defence budget for the fiscal year 2022 at 1.45 trillion yuan (USD 230 billion), a 7.1 per cent year on year increase, state-run China Daily reported quoting the draft budget proposals presented by Premier Li Keqiang to the National People's Congress (NPC), the country's parliament on Saturday.

The hike is over three times that of India's defence budget of 5.25 lakh crore (about USD 70 billion) for 2022.

Last year, China's defence spending for the first time crossed USD 200 billion. In 2021, the defence budget grew by 6.8 per cent to USD 209 billion.

In his work report presented to China's Parliament, Chinese Premier Li called for "deepening comprehensive combat readiness" from the People's Liberation Army (PLA).

He said the PLA needs to "carry out military struggles in a resolute and flexible manner" to defend the country's sovereignty, security and development interests.

China's increase in this year's defence budget came amid the standoff at eastern Ladakh and its increasing political and military tensions with the US. China has the world's second-largest defence budget after the US.

<https://indianexpress.com/article/world/china-hikes-defence-budget-to-usd-230-billion-7802278/>



### **Amid LAC Standoff, China Hikes Defence Budget To 3 Times That Of India's For 'Combat Readiness'**

***In 2021, China's defence budget crossed over USD 200 billion as it grew by 6.8 per cent to USD 209 billion.***

China on Saturday increased its annual defence budget by 7.1 per cent making it USD 290 billion from last year's budget of USD 230 billion amid the standoff with India in eastern Ladakh.

The hike makes China's defence budget over three times that of India's defence budget of 5.25 lakh crore (about USD 70 billion) for 2022.

The increase in the defence budget comes amid the standoff against India in eastern Ladakh and its increasing political and military tensions with the US.

According to a PTI report, the Chinese government proposed the defence budget for the fiscal year 2022 at 1.45 trillion yuan (USD 230 billion), a 7.1 per cent year-on-year increase.

The draft budget proposal was presented by Premier Li Keqiang to the National People's Congress (NPC) in the country's parliament today.

In 2021, China's defence budget crossed over USD 200 billion as it grew by 6.8 per cent to USD 209 billion.

In his report presented to China's Parliament, Chinese Premier Li called for "deepening comprehensive combat readiness" from the People's Liberation Army (PLA), according to PTL. He said the Chinese Army needs to "carry out military struggles in a resolute and flexible manner" to defend the country's sovereignty, security and development interests. After US, China has the largest defence budget in the world.

<https://news.abplive.com/news/world/china-defence-budget-2022-3-times-of-india-focus-combat-readiness-usd-290-billion-1517228>



*Sat, 05 March 2022*

## **India urges China to hold talks on Ladakh standoff as Beijing increases defence budget**

*There has been a military standoff in the Hot Springs area since 2020 and the objective would be to resolve and prevent any further escalation.*

China's 7.1 per cent hike in its defence budget has fuelled rumours of India urging China to talk about the military standoff around the LAC.

It is learnt that India has sent out a message to China to hold talks around the issue of LAC at the earliest. There has been a military standoff in the Hot Springs area since 2020 and the objective would be to resolve and prevent any further escalation.

Hot Springs (Kyam) is a campsite located at the border check post in the Chang Chenno River Valley in Ladakh (near the disputed border with China). Disengagement happened at Pangong Tso, Galwan and Gogra after previous rounds of talks. However, more than 50,000 troops face each other in some areas since the People's Liberation Army (PLA) carried out mass intrusions in May 2020.

China's increasing its defence budget today is a cause of concern for India. The budget has increased from USD 209 billion last year to USD 230 billion. This is three times that of India's military spending.

China's hike in defence spending comes amidst the PLA's aggression in the Indo-Pacific region. Premier Li Keqiang, while presenting the budget proposals in the Parliament, has called for deepening comprehensive combat readiness from the PLA. This has alarmed and alerted India, keeping in view that the 14th round of India-China Corps Commander Level talks, held on January 12, didn't yield any positive results. Though both sides had agreed to meet again.

India had tried to persuade China to disengage from Hot Springs and resolve patrolling rights at Depsang and Charding Nullah Junction (CNJ) in the Demchok sector. Subsequently, the External Affairs Minister, Dr S Jaishankar, during the Quad Foreign Ministers Meet in Melbourne had said that China had violated written agreements by amassing troops.

"The situation at the LAC has arisen due to the disregard by China in 2020 of written agreements with us not to amass forces at the border. So, when a large country disregards written commitments, I think it's an issue of a legitimate concern for the entire international community," Dr Jaishankar had said.

These comments didn't go down well with the Chinese. China's Foreign Ministry spokesperson Wang Wenbin had said, "We hope the Indian side will abide by agreements, not issue irresponsible remarks, and uphold peace and tranquillity along the border area with concrete actions."

The Ukraine conflict should be viewed in the context of the attempts made by PLA in the past and at no stage can India afford to lose focus on the borders.

Meanwhile, the US too has been talking about China provoking India. "Just as an increasingly provocative China is challenging the United States, it is also provoking India at every turn,"

Assistant Secretary of State for South and Central India, Donald Lu, told members of the Senate Subcommittee on the Near East, South Asia, Central Asia, and Counterterrorism on Wednesday. Lu also said that the US was working with India on bolstering its defence capabilities to deter Chinese provocations.

<https://www.newindianexpress.com/nation/2022/mar/05/india-urges-china-to-hold-talks-on-ladakh-standoff-as-beijing-increases-defence-budget-2426775.html>



*Sun, 06 March 2022*

## **Ukraine crisis: SpaceX focusing on cyber defence after Starlink signals jammed**

SpaceX founder Elon Musk has said that the company is focusing on cyber defence and overcoming signal jamming amid Russia's ongoing invasion of Ukraine.

"Some Starlink terminals near conflict areas were being jammed for several hours at a time," Musk said.

It comes after the company's broadband service was told by some governments to block Russian news sources.

"Starlink has been told by some governments (not Ukraine) to block Russian news sources. We will not do so unless at gunpoint," the tech titan tweeted.

Starlink was activated in Ukraine last week after Kyiv digital minister Mykhailo Fedorov urged Musk to provide the embattled country with stations days after it was invaded by neighboring Russia.

The service operates a constellation of more than 2,000 satellites that aim to provide internet access across the planet.

Web monitoring group NetBlocks has reported a series of significant disruptions to internet service in Ukraine since the Russian invasion began.

Musk asked users to "turn on Starlink only when needed and place antenna away as far away from people as possible" and "place light camouflage over the antenna to avoid visual detection."

He said that Starlink was the only non-Russian communications system still working in some parts of Ukraine in the wake of Russia's invasion.

Ukrainian President Volodymyr Zelensky said he had spoken to SpaceX Chief Executive Officer Elon Musk and announced the country would receive more of its Starlink satellite internet terminals next week.

"Talked to Elon Musk. I'm grateful to him for supporting Ukraine with words and deeds," Zelenskiy tweeted.

Talked to @elonmusk. I'm grateful to him for supporting Ukraine with words and deeds. Next week we will receive another batch of Starlink systems for destroyed cities. Discussed possible space projects ☐. But I'll talk about this after the war.

— Володимир Зеленський (@ZelenskyUa) March 5, 2022

This week the European Union banned Russian state-funded RT and Sputnik from the 27-nation bloc, while US-based social media giants including Twitter and Facebook parent Meta have taken steps to block the spread of Russian state-linked news media.

Since its military invaded on February 24, Russia has pummeled Ukrainian cities, with officials reporting hundreds of civilians killed.

Russian authorities have repeatedly and falsely decried reports of Russian military setbacks or civilian deaths in Ukraine as "fake" news, as well as reports calling the offensive a war or an

invasion. They have imposed a news blackout, with multiple media websites partially inaccessible, Twitter restricted and Facebook blocked.

State media outlets and government officials refer to Russia's invasion of Ukraine as a "special military operation" and insist the Russian forces only target military facilities.

<https://www.wionews.com/science/ukraine-crisis-spacex-focusing-on-cyber-defence-after-starlink-signals-jammed-459670>

## Science & Technology News



*Sat, 05 March 2022*

### जमशेदपुर के वैज्ञानिकों ने क्या कर दिया कमाल, जानिए

भारत में मोबाइल फोन और बैटरी आधारित इलेक्ट्रॉनिक्स की संख्या में लगातार इजाफा हो रहा है. मोबाइल फोन के अलावा लैपटॉप, रेफ्रिजरेटर, कैलकुलेटर, एयर-कंडीशनर, फैंक्स मशीन, फोटो-कोपीयर और बच्चों के खिलौने इत्यादि ने मानव जीवन में सुविधाएं बढ़ाई हैं तो ई-कचरे के रूप में बड़ी समस्या को भी जन्म दिया है.

एनएमएल जमशेदपुर के वैज्ञानिक डॉ.मनीष कुमार झा कहते हैं- इनमें से ज्यादातर उपकरणों में लिथियम आयन बैटरी होती है जो एक निश्चित समय के बाद किसी काम की नहीं रहती और ई-कचरे का रूप ले लेती हैं. बड़ी संख्या में इसका अनियंत्रित प्रबंधन व निष्पादन पर्यावरण को भारी नुकसान पहुंचा रहा है. साथ ही साथ मिट्टी व जल-प्रदूषण, मानव जीवन तथा जलीय जीव-जंतुओं को भी इससे भारी नुकसान हो रहा है. मोबाइल फोन बैटरी की रिसाइक्लिंग करके कोबाल्ट, लिथियम, कॉपर, मैंगनीज और निकेल जैसी धातुओं का उत्पादन किया जा सकता है. एनएमएल के वैज्ञानिकों ने मोबाइल बैटरी को पुनःचक्रण करने की तकनीक भारत द्वारा प्रायोजित एफटीटी (फास्ट ट्रैक टेक्नोलॉजी ट्रांसफर) प्रोजेक्ट मिशन के तहत विकसित की है. खास बात यह है कि इस लिथियम आयन बैटरी में 'कोबाल्ट' पाया जाता है, जिसका भारत में दूसरे देशों से आयात किया जाता है. भारत के पास कोबाल्ट का भंडार भी नहीं है.

#### कार्ययोजना बनाने की जरूरत

एनएमएल के वैज्ञानिक डॉ.मनीष कुमार झा ने बताया कि ई-कचरे से छुटकारा पाने के लिए एक समयबद्ध और युद्धस्तर की कार्य योजना की जरूरत है. सरकारी, गैर-सरकारी एजेंसियों, उद्योगों, निर्माताओं, उपभोक्ताओं, स्वयंसेवी समूहों और सरकार के स्तर पर जागरूकता पैदा करने और उसे बनाए रखने की जरूरत है. ई-कचरे के संग्रहण लक्ष्य और वास्तविक संग्रहण के अंतर को कम किया जाना चाहिए. डिसमैटल क्षमता को बढ़ाने की जरूरत है. पर्यावरणीय लिहाज से जुर्माने या मुआवजा जैसी व्यवस्थाएं रखनी चाहिए. साथ ही ई-कचरे को लेकर सतत निगरानी और निरीक्षण



की भी जरूरत है.यह भी जरूरी है कि गैरआधिकारिक और गैरकानूनी स्तर पर चल रहे रिसाइक्लिंग कारोबार को बंद किया जाना चाहिए. बेहतर होगा कि उन्हें सही दिशा में प्रशिक्षित और जागरूक कर वैध बनाया जाए, लेकिन ये भी ध्यान रखे जाने की जरूरत है कि ऐसे ठिकाने आबादी और हरित क्षेत्र से दूर बनाए जाएं ताकि पर्यावरण पर कम से कम प्रभाव पड़े. एनजीटी का कहना है कि सीपीसीबी को कम से कम छह महीने के एक निश्चित अंतराल पर ई-कचरे के निस्तारण से जुड़ा स्टेटस अपडेट करते रहना चाहिए. जाहिर है यह काम सभी राज्यों के प्रदूषण बोर्डों के साथ समन्वय से ही संभव हो पाएगा और राज्यों में भी सभी उत्तरदायी एजेंसियों को इस बारे में न सिर्फ मुस्तैद रहना होगा बल्कि उन ठिकानों को चिन्हित भी करते रहना होगा जो इस अवैध निस्तारण के चलते पर्यावरणीय लिहाज से नाजुक हो रहे हैं. फिर चाहे वो वहां का भूजल हो या वहां की हवा या वहां के लोगों की सेहत.

### **क्या है ई वेस्ट**

इलेक्ट्रॉनिक क्रान्ति ने हमारे जीवन को सुख-सुविधाओं से तो परिपूर्ण कर दिया है, लेकिन ई कचरा एक गंभीर चुनौती के रूप में हमारे सामने आया है. इलेक्ट्रॉनिक वस्तुओं के अंबार ने ई-कचरा के रूप में एक नई पर्यावरणीय समस्या को जन्म दिया है. ई-कचरा से तात्पर्य बेकार पड़े जैसे इलेक्ट्रॉनिक उपकरणों से है, जो अपने उपयोग के उद्देश्य हेतु उपयुक्त नहीं रह जाते. पूरी दुनिया में हर साल लगभग 5 करोड़ टन इलेक्ट्रॉनिक और इलेक्ट्रिकल कचरा हम पैदा कर रहे हैं. यह जानकारी संयुक्त राष्ट्र की सात एजेंसियों की एक संयुक्त रिपोर्ट में सामने आई है.

### **20 फीसदी का ही रिसाइकिल हो पाता है**

औपचारिक रूप से ई-कचरे का केवल 20 फीसदी हिस्सा ही रिसाइकिल होता है. इसके अलावा विश्व के लाखों लोग अनौपचारिक रूप से कचरे को छांटने, गलाने जैसे काम करते हैं, जिनका सेहत पर बुरा असर पड़ता है. ज्यादातर ऐसा कचरा लैंडफिल में यानि जमीन में गड्ढे खोदकर उनमें भर दिया जाता है. जमीन के रास्ते इससे निकलने वाले जहरीले तत्व पर्यावरण में फैलते हैं. कुछ को जलाया भी जाता है जिससे हवा में भी हानिकारक गैसों घुल जाती हैं. संयुक्त राष्ट्र के एक अध्ययन में पाया गया है कि अमेरिका और चीन ने साल 2016 में क्रमशः 72 लाख टन और 63 लाख टन इलेक्ट्रॉनिक कचरा पैदा किया. इसके बाद 21 लाख टन के साथ जापान तीसरे स्थान पर रहा. विशेषज्ञ बताते हैं कि एक टन ऐसे ई-कचरे में से उतने ही सोने के अयस्क से करीब 100 गुना ज्यादा सोना निकाला जा सकता है. इसके हिसाब से दुनिया भर में मौजूदा ई-कचरे का मूल्य सालाना करीब 62.5 अरब डॉलर के बराबर हुआ, जो कि बर्बाद हो रहा है.

### **डम्पिंग ग्राउंड बन रहे विकासशील देश**

विकासशील देशों को सर्वाधिक सुरक्षित डम्पिंग ग्राउंड माने जाने के कारण भारत सरीखे देश ऐसे ई-कचरे के बढ़ते आयात से चिंतित हैं. अनेक देशों में तेजी से बढ़ती इलेक्ट्रॉनिक क्रान्ति से एक तरफ जहां आम लोगों की इस पर निर्भरता बढ़ती जा रही है, वहीं दूसरी ओर पर्यावरण के लिए खतरा और कैंसर जैसी गंभीर बीमारियों का स्रोत बन रहे इस ई कचरे का भारत प्रमुख उपभोक्ता है .



**गैरकानूनी तरीके से असंगठित क्षेत्र में हो रहा है काम**

ई-वेस्ट के निपटारा में बड़े स्तर पर असंगठित रूप से काम हो रहा है. एक अनुमान के मुताबिक लगभग 24 हजार लोग असंगठित रूप से ई-कचरा निपटान इकाइयां चला रहे हैं. इन इकाइयों में हाथ से ही सारा काम होता है. ऐसे में इस बात का खतरा रहता है कि ई-वेस्ट के जहरीले कचरे से इसमें काम कर रहे लोगों के स्वास्थ्य पर बुरा असर हो रहा है. कई लोगों का कहना है कि असंगठित इकाइयों से यह काम कराते ताकि उनकी लागत में कमी आए लेकिन इससे होने वाला नुकसान बहुत बड़ा है.

**भारत में गंभीर स्थिति**

दुनिया में सबसे ज्यादा इलेक्ट्रॉनिक कचरा पैदा करने वाले शीर्ष पांच देशों में भारत भी शामिल है. इसके अलावा इस सूची में चीन, अमेरिका, जापान और जर्मनी है. एक रिपोर्ट में यह जानकारी दी गई है कि देश में सालाना कचरे का उत्पादन 21.50 लाख टन होता है. प्रत्येक व्यक्ति 200 ग्राम से 600 ग्राम तक वेस्ट का निर्माण करता है. 2030 तक भारत में 16.5 करोड़ टन कचरे का उत्पादन हो जाएगा.

**रोजगार का होगा सृजन**

वर्ष 2025 तक ई-वेस्ट के क्षेत्र में भारत में लगभग 5 लाख नौकरियों का सृजन हो सकता है. उभरते बाजार में निजी क्षेत्र पर केन्द्रित विकास वित्त संस्थान अन्तराष्ट्रीय वित्त निगम ने यह अनुमान लगाया है.

<https://newswing.com/what-did-the-scientists-of-jamshedpur-do-amazing-know/354951/>

## The Statesman

*Sat, 05 March 2022*

### **SAMat and JNCASR to help India realise ambitions in material research by 2047: Secy Science and Technology**

“A building for SAMat at JNCASR campus, based on non-Governmental funds, as envisioned by Professor CNR Rao, is a dream coming true,” S Chandrasekhar said.

As India marches towards the 100th year of Indian Independence in 2047, activities of SAMat (School of Advanced Materials) and Jawaharlal Nehru Centre for Advanced Research (JNCASR) will strive to realise India’s ambitions in the field of material research and beyond.

Stating this, Secretary Department of Science and Technology (DST) S Chandrasekhar on Saturday underlined the important role the two premier institutions were envisaged to play in the field. His remarks came while unveiling the foundation stone of the building a complex for SAMat at Jakkur Campus in Bangalore.

The foundation stone of the School of Advanced Materials (SAMat) was unveiled on Friday. It is expected to bring together all the materials research activity of the Jawaharlal Nehru Centre for Advanced Research (JNCASR) – a centre that has emerged as one of the frontier areas of materials research in the country and worldwide over the last 30 years.

<https://www.thestatesman.com/technology/samat-jncasr-help-india-realise-ambitions-material-research-2047-secy-science-technology-1503050136.html>

