

Jan  
2022

# 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

खंड : 47      अंक : 12      18 जनवरी 2022

Vol. : 47      Issue : 12      18 January 2022



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## India issues NOTAM for launch of experimental flight take off over Bay of Bengal

*Indigenously-developed Hypersonic Technology Demonstrator Vehicle (HSTDV) will be tested from Integrated Test Range on Abdul Kalam Island in the Bay of Bengal.*

*By Shivani Sharma*

Taking the missile programme ahead, India has issued a NOTAM warning for the launch of an experimental flight take off over the Bay of Bengal for the period from January 22 to 25. The maximum designated length is 600 km and this is expected to be the longer duration test of the hypersonic technology demonstrator vehicle.

The Indian government has fast-tracked its development and a 1500 km range production-ready hypersonic missile will be ready within the next four years. The issue of NOTAM for testing Experimental Flight Vehicle is significant in terms of India's preparedness on the Eastern front.

Indigenously-developed Hypersonic Technology Demonstrator Vehicle (HSTDV) will be tested from Integrated Test Range (ITR) on Abdul Kalam Island in the Bay of Bengal. DRDO developed HSTDV is mounted on a hypersonic missile platform.

The test would be essentially another step towards the development of an entire family of very high cruise missiles and other weapon systems. In 2021 India successfully test-fired the Agni P missile two times. The first trials had happened in the month of June while the second successful trials were done on December 21.

The successful flight launch of HSTDV was also conducted in the month of September last year. The ballistic missile developed by DRDO has the capability between 1,000 and 2,000 kilometres, weighs half of Agni III and has new kinds of propulsion and new guidance.

It also comes with the technologies found in the 4000-kilometre range Agni-IV and 5000-kilometre range Agni-V. The new Agni P can be used to target enemy warships in the Indo-Pacific.

Agni class of missiles are the mainstay of India's nuclear launch capability which also includes the Prithvi short-range ballistic missiles, submarine-launched ballistic missiles and fighter aircraft. The longest of the Agni series, Agni-V, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km, has already been tested several times and validated for induction.

The scheduled test for the HSTDV is indicative of the fastrack missile programme of the country. The Ministry of Defence has recently shelved multiple defence import projects including, IGLAS, Mig 29 and P8I to enhance the indigenous procurement in defence forces.

<https://www.republicworld.com/india-news/general-news/india-issues-notam-for-launch-of-experimental-flight-take-off-over-bay-of-bengal-articleshow.html>



## Aircraft carrier Vikrant completes third sea trials, returns to Kochi harbour

*The IAC had begun its sea trial on January 9 to carry out complex manoeuvres in high seas ahead of its planned induction in August.*

Kochi: India's first indigenous aircraft carrier (IAC) Vikrant has returned to Kochi harbour after completion of its third sea trials in high seas, a defence spokesperson said here on Monday.

"IAC returned from sea trials on January 16 (Sunday), wherein large number of ship systems were operated and tested with training on various equipment fitted onboard," the spokesperson said, adding that the trial data will now be analysed with mandatory inspections and balance work on the ship.

The IAC had begun its sea trial on January 9 to carry out complex manoeuvres in high seas ahead of its planned induction in August.

The 40,000-tonne aircraft carrier, the largest and most complex warship to be built in India, successfully completed a five-day maiden sea voyage in August last year and underwent 10-day sea trials in October.

Several scientists from the Naval Science and Technological Laboratory, a DRDO facility based at Visakhapatnam, witnessed the third phase of sea trials of Vikrant.

The warship will operate MiG-29K fighter jets, Kamov-31 helicopters, and MH-60R multi-role helicopters.

The IAC has been built at a cost of around Rs 23,000 crore and its construction propelled India into a select group of countries having capabilities to build state-of-the-art aircraft carriers.

President Ram Nath Kovind and Vice President M Venkaiah Naidu visited the ship recently here.

<https://www.newindianexpress.com/nation/2022/jan/17/aircraft-carrier-vikrant-completes-third-sea-trials-returns-to-kochi-harbour-2407857.html>



The Indigenous Aircraft Carrier Vikrant that headed out for its third set of sea trials on Sunday, Jan 9, 2022. (Photo | Express)

## The Tribune

### Missiles, all-terrain vehicles, LMGs on import ban list

*The purchase of Quick Reaction Surface to Air Missiles (QR-SAM), which was being done from global sources, is now on 'buy Indian' list*

New Delhi: As part of a relook at importing military equipment, some items have been put on the list that will only be sourced indigenously.

#### Policy on cards

The Ministry of Defence is crafting a policy that will allow import of only specific items that cannot be produced in India. It will lay down guidelines which items can be imported and why.

The purchase of Quick Reaction Surface to Air Missiles (QR-SAM), which was being done from global sources, is now on 'buy Indian' list. Only Indian firms will be able to supply the missile for Army's air-defence system.

Similarly, the all-terrain vehicles used in high-altitude areas will only be sourced from Indian vendors. The light machine guns (LMGs) for the Army will also be sourced from local sources. A decision in this regard was taken at a high-level virtual meeting on Friday. The decision to add more items on the 'import ban' list is expected in the coming week.

The Tribune had first reported in its January 12 edition that only cutting-edge technology will be imported and that too will have some kind of clause of servicing and maintaining the equipment. Import could be allowed in items such as aircraft engines, armed drones and long-range planes, among others.



Defence Minister Rajnath Singh had last month said at an industry event that it will be 'make in India' for military equipment in future.

Within the Ministry of Defence, a policy is being crafted that will allow import of only specific items which cannot be produced in India. This will lay down guidelines which items can be imported and why. It is called 'Defence Production and Export Promotion Policy'.

The review will provide the list of items that cannot be imported and those which could be made in India.

<https://www.tribuneindia.com/news/nation/missiles-all-terrain-vehicles-lmgs-on-import-ban-list-361929>

## THE TIMES OF INDIA

Tue, 18 Jan 2022

# **Grey-Zone Warfare: India's export of BrahMos missile to the Philippines a credible strategic move against Chinese aggression**

*By Rudroneel Ghosh*

The Philippines recently revealed that it will become the first foreign buyer of the BrahMos supersonic cruise missile. This is a huge development in the context of the growing pushback against China's aggressive tactics spanning from East Asia to the Himalayas. The BrahMos—jointly developed by India and Russia – is said to be the fastest supersonic cruise missile. The Philippines is reportedly interested in acquiring the shore-based version of the missile which clearly indicates Manila's desire to counter Beijing's assertive manoeuvres in the South China Sea. After all, the Chinese maritime militia has been constantly harassing neighbouring Southeast Asian nations, even in the latter's Exclusive Economic Zones.

As is well known, China has maritime disputes with several of its Asean neighbours in the South China Sea. In fact, almost all of South China Sea is claimed by Beijing as per its expansive Nine Dash Line cartographic innovation. However, this was rejected by the Permanent Court of Arbitration in 2016. But that didn't stop China from militarising South China Sea islands, creating artificial islands and unilaterally exerting its territorial and maritime claims in the region.

This has come at a time when China has taken an overall assertive, nationalistic turn under current President Xi Jinping, pressing out on all fronts. And that in turn is part of Xi's revisionist policies to strengthen and preserve the authority of the Chinese Communist Party at a time when Chinese society and economy have evolved faster than anyone had expected. In other words, Xi is using nationalism to once again centralise power within the party-state system and prolong the life of the Chinese Communist Party, and prevent China from facing a similar fate as that of the erstwhile Soviet Union.

But this course of action directly pits China against its neighbours. Which explains tensions in recent years between China and Japan (East China Sea), China and Asean (South China Sea),

China and India (Line of Actual Control), and of course China and the US. However, finally affected nations are beginning to coordinate and push back. Platforms such as the Quad (India, US, Japan and Australia) and AUKUS (Australia, UK and US) exemplify this point. And it is in this context that the Philippines' purchase of the BrahMos missile from India needs to be seen.

Interestingly, the Philippines has actually done a U-turn on China in recent years. It was promised investments worth \$24 billion by Beijing in 2016. However, only a small fraction of that amount has materialised. Manila now asks Beijing to respect the 2016 Permanent Court of Arbitration ruling on the South China Sea amid China's strong-arm tactics in the region. India, on the other hand, is locked in a border standoff with China since the summer of 2020. So from New Delhi's and Manila's point of view, the Indian export of the BrahMos missile to the Philippines is a good strategic counter to Chinese aggression.

And this contract could in turn facilitate similar exports of the BrahMos to other Asean nations like Indonesia and Vietnam that have already expressed interest. What could then emerge is a solid defence linkage between India and key Asean nations with obvious implications for Beijing. Needless to say, this is required if China is to be compelled to back down. Also, no one expects an escalation to actual full-blown military conflict given the strong economic interdependencies. After all, Asean has joined the RCEP trade agreement with China. Even India-China trade hit a record high of \$125 billion in 2021. But it's clear that we have entered an era of grey-zone warfare with China where military manoeuvres, posturing and low-intensity clashes will continue below the threshold of all-out war. And that's precisely what India and likeminded Asean nations are preparing for with deals like BrahMos.

*(Disclaimer: Views expressed above are the author's own.)*

<https://timesofindia.indiatimes.com/blogs/talkingturkey/grey-zone-warfare-indias-export-of-brahmos-missile-to-the-philippines-a-credible-strategic-move-against-chinese-aggression/>



*Tue, 18 Jan 2022*

## **With BrahMos, will the Philippines be able to stand up to China's bullying?**

New Delhi: The Philippines has emerged as the maiden buyer of BrahMos supersonic missile systems, jointly produced by India and Russia, amid China's aggressive territorial claims in the South China Sea (SCS) region. Both sides were in an advanced stage of negotiations for a number of years and would have struck the deal earlier had not the Covid-19 pandemic intervened and hit the Philippines exchequer. Manila has now agreed to buy BrahMos supersonic anti-ship missiles from India for US \$375-million to shore up its defences in the disputed SCS.

The acquisition is the newest of a number of similar capacity enhancements for the Philippine Army unveiled in contemporary weeks. In December, Philippine Protection Secretary Delfin Lorenzana made public the acquisition of six patrol ships from Austal for \$600 million and two corvettes from Hyundai Heavy Industries for \$550 million.

The acquisition of the BrahMos, said to be the world's fastest cruise missile, 'marks a breakthrough in efforts to upgrade the Philippines defense arsenal,' to quote a Filipino analyst.

The BrahMos has a top speed in the range of Mach 3, a surface-launch range of about 160 nm and a payload of about 440 pounds of explosives. It is designed with naval warfare in mind, can fly just 30 feet off the surface and carry out evasive manoeuvres to evade air defences. This universal missile can be launched from ships, mobile launchers, submarines and aircraft. It has network-centric architecture, multiple trajectories, way-point capability, and is capable of engaging any kind



of land or naval targets beyond the horizon in a minimum deployment time. It is the only supersonic cruise missile in the world that flies at three times the speed of sound.

It appears from reports in the Filipino press that Manila is primarily interested in the shore-battery version, which would give its forces coverage of the majority of the Spratly Islands from bases on Palawan. Competing maritime claims in the Spratlys are an area of constant friction between China and the Philippines, with defence implications for the Philippine-aligned United States. BrahMos will upload substantial confirmed capacity to the Philippines (according to the Manila website Manilanews.ph) coastal defences, and it compares favourably with anti-ship missiles in use with different navies.

It's some distance quicker than the US Army's Tomahawk or the Chinese army's YJ-18. Emerging hypersonic anti-ship missile technology is beginning to outcompete 'slow' supersonic designs, but only Russia and China currently deploy unclassified hypersonic weapons, and only with a limited number of specialized units.

On Friday, Defense Secretary Delfin Lorenzana released a document via social media showing that Manila had approved the acquisition of the land-based missile system for the Philippine Navy from India's BrahMos Aerospace Private Ltd. 'As head of procuring entity (HOPE), I recently signed the Notice of Award for the Philippine Navy Shore-Based Anti-Ship Missile Acquisition Project,' Lorenzana said on Facebook. 'Negotiated with the government of India, it includes the delivery of three batteries, training for operators and maintainers as well as the necessary Integrated Logistics Support (ILS) package.'

Export orders by the Philippines are likely to be placed soon and Manila is expected to purchase BrahMos missiles under a 'government-to-government deal'. Earlier this year, both sides signed a defence arrangement that would enable export of defence equipment to Manila from India.

The timing of the Filipino announcement for purchase of the missiles is significant, as earlier last week, India said it had successfully test-fired a naval variant of the BrahMos missile from an Indian Navy ship. 'Advanced sea to sea variant of BrahMos Supersonic Cruise missile was tested from INS Visakhapatnam today,' India's Defense Research and Development Organization said in a tweet, adding that the missile hit the designated target ship precisely.

#### BrahMos Sale to Manila marks a breakthrough

While the BrahMos sale is a major breakthrough in New Delhi's attempt to emerge as a supplier of weapons to Southeast Asia, it has to be considered within the broader context of India's growing relationship with the countries of the region, including the Philippines, under the banner of its Act East Policy (AEP). India's ties with the Philippines have been upgraded over the past few years with the two countries expanding their defence partnership and negotiating a PTA (Preferential Trading Arrangement).

Indian Navy and coast guard ships regularly visit the Philippines and hold consultations with their counterparts. The participation of officers of the armed forces of both countries in various specialised training courses in each other's countries has intensified. Earlier, India extended a \$100-million defence-related LoC to Manila. The Philippines, a US ally for decades, has been keen to diversify sources of its defence hardware including from India. In 2018, a Memorandum of Understanding (MOU) on Defence and Logistics was signed. An MOU on Sharing of White Shipping Information – non-military/non-government shipping vessel information – was inked last year.

#### Experts in the region take note of the Development

Experts from Southeast Asia and from the US have already taken note of the development. Collin Koh, a Singaporean analyst from the Rajaratnam School of International Studies, pointed out that India is only the second new entrant into the Southeast Asia supersonic anti-ship missile game after Russia. As for the Philippines, it becomes only the third Southeast Asian country after Indonesia and Vietnam, which can boast of an anti-ship supersonic cruise-missile capability, he added. 'I'll say it's more than a breakthrough – it's practically a leapfrog,' Koh said via Twitter.

This is the first export order for BrahMos, to quote Derek Grossman, senior defense analyst at the RAND Corp., a US think-tank, who said via Twitter: ‘China won’t be pleased! It’s official, the Philippines is getting India’s BrahMos.’

Besides Koh and Grossman, many other experts see the BrahMos acquisition as a value-for-money option for a developing country with limited cash for defence spending. ‘It’s a cost-effective solution for the navy to have a sea-denial capability,’ retired navy admiral Rommel Jude Ong, now with the Ateneo School of Government in Manila, who told Benar News from Malaysia in March 2021, when the Philippines and India signed an initial agreement for the deal. ‘The BrahMos, with a 290-km range, will provide a defensive buffer across a certain extent of the EEZ. It gives the navy a ‘mission-kill’ option in case of conflict,’ he said at the time, referring to Manila’s EEZ in the South China Sea.

Back at that time, tensions were running high between Manila and Beijing over the presence of some 200 fishing boats within the EEZ believed to be manned by Chinese militias. The diplomatic standoff went on for months, and although the situation has de-escalated, Philippine officials say that unauthorized Chinese vessels remain a constant presence in Philippine-claimed waters of the SCS. Manila, meanwhile, has been in a race to upgrade and modernize its navy, which until recently had to make do with a fleet of legacy vessels, many of which date back to World War II.

Over the last three years, as we have pointed out earlier, Manila has acquired its first missile-capable warships, a repurposed corvette from the South Korean navy, and two brand new South Korean-made frigates. Last month, Manila signed on to acquire two new corvettes from South Korean-maker Hyundai Heavy Industries for \$554 million. Like the earlier corvette and frigates, these will have anti-ship, anti-submarine and anti-air warfare capabilities.

Can Manila stand up to the Chinese Bully?

With the BrahMos in possession, will Manila be able to stand up to China’s threat in case of a real conflict with Beijing? Experts, by and large, are pessimistic in their assessment and believe the Philippines is both outclassed and outnumbered militarily by China when it comes to asserting its territorial rights in the South China Sea. Philippines President Rodrigo Duterte had accepted the same last year when he had said it was better for the Philippines to pursue ‘diplomatic endeavours’ with China over the SCS dispute because ‘China has the arms’ and Manila did not.

Lorenzana also had admitted that the Philippines was ‘not yet 25 per cent’ of the way to achieving minimum credible defence capability. Some experts are critical of Manila’s decision to go for the BrahMos because the country doesn’t have the required infrastructure to ensure that purchases are maintained and manpower is trained to maintain the systems. Some even go to the extent of suggesting that the country doesn’t have a budget to configure the ships to launch them. Leaving aside the sceptics, the procurement of the BrahMos will surely boost the morale of the Philippines Navy to deal with China in future over its possessions in their EEZ. More importantly, once countries like Indonesia and Vietnam also eventually go for the BrahMos, it will be a game changer and embolden all of them to look Beijing in the eye.

*(Baladas Ghosal is a former Professor and Chair in Southeast Asian Studies, Jawaharlal Nehru University & Secretary General, Society for Indian Ocean Studies)*

<https://www.canindia.com/with-brahmos-will-the-philippines-be-able-to-stand-up-to-chinas-bullying/>



 **The Indian EXPRESS**

Tue, 18 Jan 2022

### 75 tri-services aircraft part of R-Day flypast to mark 75 years of Independence

*Along with the Air Force jets, transport planes and helicopters, the flypast will also include aircraft of the Navy and Army's aviation wing.*

The flypast on this year's Republic Day will be the largest that the country has seen till now with 75 aircraft from the three services participating to mark 75 years of Independence. Further, the Air Force will also pay homage to its personnel and operations for the 1971 War, as India commemorated 50 years of victory over Pakistan and liberation of Bangladesh.

Along with the Air Force jets, transport planes and helicopters, the flypast will also include aircraft of the Navy and Army's aviation wing. The Air Force will bring out all its fighter jets, including Rafale, Su-30mki, Light Combat Aircraft Tejas, Jaguar and Mig 29, it will also have its Apache, Chinook, Mi-17v5 helicopters. Air Force's vintage aircraft like Dakota, Dornier and Gnat, which is also called Sabre Slayer for shooting down Pakistan's Sabre fighter jets, will also be featured. From the Navy, MiG 29 and P8I surveillance aircraft will participate, and from the Army, the weaponised Advanced Light Helicopter Rudra will be part of the flypast formations.



Along with the Air Force jets, transport planes and helicopters, the flypast will also include aircraft of the Navy and Army's aviation wing. (File Photo)

The two formations dedicated to the 1971 War are Tangail and Meghna. During the war, a Dakota plane used to drop Army soldiers across the enemy lines in a place called Tangail, will be part of the flypast. It will be flanked by a Dornier 228 and a C130-J.

The other formation, Meghna, is named after the river near Dhaka. Thousands of Indian Army personnel aboard Air Force's helicopters were transported across the river, which became elemental to take Dhaka. The formation will include Chinook and Mi-17v5 helicopters.

The Air Force will also have a tableau in the parade, which will showcase a Mig-21 plane attacking the Governor's House in Dhaka in the 1971 War, along with other systems of the Air Force.

<https://indianexpress.com/article/india/republic-day-flypast-independence-75-years-7728456/>

## इस गणतंत्र दिवस पर दिखेगी भारतीय वायुसेना की ताकत, 1971 के युद्ध की भी झलकियां

गणतंत्र दिवस परेड की वर्चुअल प्रेस प्रीव्यू के दौरान वायुसेना ने बताया कि, टैब्लो में स्वदेशी 'एसलेशा' रडार और जीसैट-7ए मिलिट्री सैटेलाइट का मॉडल भी होगा।

By: नीरज राजपूत

इस बार गणतंत्र दिवस परेड में वायुसेना की झांकी में वायुसेना की ताकत और गौरवशाली इतिहास की झलक देखने को मिलेगी। वायुसेना की 'टैब्लो' में 1971 के युद्ध में ढाका के गर्वनर के घर पर मिग-21 की बमबारी को दर्शाया गया है तो मिसाइलों के साथ राफेल लड़ाकू विमान और स्वदेशी अटैक हेलीकॉप्टर, एलसीएच भी दिखाया गया है।

सैटेलाइट का मॉडल भी तैयार

गणतंत्र दिवस परेड की वर्चुअल प्रेस प्रीव्यू के दौरान वायुसेना ने बताया कि, टैब्लो में स्वदेशी 'एसलेशा' रडार और जीसैट-7ए मिलिट्री सैटेलाइट का मॉडल भी होगा। डीआरडीओ द्वारा तैयार की गई इस एसलेशा मार्क-1 रडार को उंचे पहाड़ों से लेकर रेगिस्तान तक में दुश्मन के लड़ाकू विमान, हेलीकॉप्टर और मध्यम दूरी पर उड़ रहे यूएवी-ड्रोन को 'डिटेक्ट' करने के लिए इस्तेमाल किया जाता है।

राफेल के साथ मिसाइलों का प्रदर्शन

वायुसेना के मुताबिक, टैब्लो के अगले हिस्से में '71 के युद्ध में पूर्वी पाकिस्तान (अब बांग्लादेश) के गर्वनर के सरकारी आवास पर बमबारी करते मिग-21 लड़ाकू विमान को दिखाया गया है। झांकी के पिछले हिस्से में राफेल लड़ाकू विमान को मीटियोर, मीका और स्कैल्प मिसाइलों के साथ दर्शाया गया है। इसके अलावा स्वदेशी लाइट कॉम्बेट हेलीकॉप्टर, एलसीएच को 08 'ध्रुवास्त्र' मिसाइल, रॉकेट और गन के साथ दिखाया गया है।

वायुसेना के मुताबिक, गणतंत्र दिवस परेड में कुल 96 वायुसैनिक और चार अधिकारियों की टुकड़ी हिस्सा लेगी। वायुसेना ने 2011, 12, 13 और 20 में सर्वश्रेष्ठ मार्चिंग टुकड़ी का खिताब जीता था। वायुसेना के 75 संगीतकारों का म्यूजिक बैंड भी रिपब्लिक डे परेड का हिस्सा होगा।

<https://www.abplive.com/news/india/republic-day-parade-2022-indian-airforce-tableau-and-contingent-1971-war-and-rafale-model-ann-2040578>



भारतीय वायुसेना दिखाएगी अपनी ताकत (फाइल फोटो)

## **Explained: Why indigenous Aircraft Carrier INS Vikrant Puts India in select group of nations**

It's the "largest and most complex warship built in the country" and has just concluded a [third round of sea trials](#) ahead of its planned induction later this year. Sharing its name with an earlier vessel that had a storied career with the Indian Navy, the INS Vikrant propels the country into a select group of nations that have been able to master the knowhow to produce their own aircraft carriers. Here's what you need to know.

### **WHAT DID THE LATEST TRIALS INVOLVE?**

A defence official said in a tweet on January 17 that the INS Vikrant had "returned after completing 3rd Sea Trials", days after it was reported to have embarked on its latest round of tests on January 9.

Known as Indigenous Aircraft Carrier, or IAC-1, it will be christened INS Vikrant when it enters service, reportedly in August this year.

The official said that the latest trials saw the testing of a large number of equipment and the various systems fitted onboard with the data to now be "analysed with mandatory inspections & balance work on the ship".

The aircraft carrier had successfully completed a [five-day maiden sea voyage](#) in August last year and then undergone a 10-day sea trial in October. Ahead of its third sea trial, a navy spokesperson had said that it was sailing to "undertake complex manoeuvres to establish specific readings of how the ship performs in various conditions".

Reports say that the maiden sea trials had looked at the ship's propulsion, navigational suite and basic operations while the second run comprised machinery and flight trials.

### **HOW BIG IS THE INS VIKRANT?**

Stretching to 262m, the IAC-1 in its length exceeds that of two football fields and is 62m wide. Its height of 59m packs in 14 decks in all and the vessel features over 2,300 compartments and provides room for a crew of around 1,700 personnel and includes specialised cabins for women officers.

The IAC-1 has a total displacement of 40,000 tonnes and a top speed of around 28 knots (more than 50kmph). It has a cruising speed of 18 knots with an endurance of about 7,500 nautical miles.

### **HOW WAS IT BUILT?**

Construction of the vessel began in 2009 at the Cochin Shipyard Ltd (CSL) and the total cost involved is around Rs 23,000 crore. IAC-1 was designed by the Indian Navy's Directorate of Naval Design.

Officials have been reported as saying that the "the power used in the ship can light up half of Kochi city" and that all the cables on board run to a total length of 2,600km. Maj. Manoj Kumar, the designer architect of IAC-1, is reported to have shared that the steel used in the ship was equivalent to three Eiffel towers.

"There is a fully functional medical complex inside the ship with two operation theatres. There is a kitchen to cater to the needs of at least 2,000 staff... We can park 20 aircraft in the hangar," he had told reporters in August 2021.

The ship also contains 150km of pipes and 2,000 valves along with a "wide range of finished products, including rigid hull boats, galley equipment, air-conditioning and refrigeration plants, and steering gear".

### HOW INDIGENOUS IS IT?

According to the Centre, over 76 per cent of the material and equipment on board IAC-1 is indigenous, including “21,500 tonnes of special grade steel developed indigenously and used in Indian Naval Ships for the first time”.

The Union Ministry of Ports, Shipping and Waterways has said that CSL “carried out the detailed engineering of the ship using advanced software which enabled the designer to get a complete 3D view of the compartments of the ship”, representing the “first time in the country that a ship of the size of an aircraft carrier is completely modeled in 3D and production drawings extracted from the 3D model”.

The Indian Navy is reported to have said that over 50 Indian manufacturers were directly involved in the project, which is a result of the labours of more than 40,000 people who were employed directly or indirectly in its construction. More than three-fourths of the total project cost has been ploughed back into the Indian economy, reports add.

Flag Officer Commanding-in-Chief of the Southern Naval Command Vice Admiral AK Chawla had said in August last year that the vessel “demonstrates the Indian Navy’s capability to design and oversee the construction of the most complex of warships, as also the capability of our ship-builders and industries to successfully execute such a large and complex ship-building project”.

### WHAT ARE THE AIRCRAFT IT WILL CARRY?

The defence ministry says that IAC-1 has been designed to operate “an assortment of fixed wing and rotary aircraft”. According to the Navy, it will be carrying the Russian-made MiG-29K fighter jet and Kamov-31 early warning helicopters along with the indigenously manufactured Advanced Light Helicopters (ALH) and the MH-60R multirole helicopter made by the American defence major Lockheed Martin.

### HOW MANY AIRCRAFT CARRIERS DOES THE INDIAN NAVY OPERATE?

The only operational aircraft carrier with the Indian Navy at present is the INS Vikramaditya, which had served in the erstwhile Soviet and, thereafter, the Russian navy as Admiral Gorshkov before being inducted by India in 2013.

The naming of IAC-1, which is to be commissioned as INS Vikrant, is a nod to one of the two earlier aircraft carriers that India operated — the other being INS Viraat — both of which were acquired from the UK and commissioned in 1961 and 1987, respectively. INS Vikrant, which played an important role in the eastern theatre during the 1971 Indo-Pak war was decommissioned in 1997 with INS Viraat sailing having been retired in 2017. Pakistan does not operate any aircraft carriers.

The IAC-1, after its induction, will be a key component of the Indian Navy’s push to establish itself as a ‘blue water’ force, that is, one which has the ability to project its power on distant seas. It is especially important amid India’s bid to be a net security provider in the Indian Ocean region where it faces a strong contender in the form of China, whose navy, too, is heavily focusing on aircraft carriers and has already inducted two vessels.

Globally, only five or six countries are said to have the capability of designing and executing the construction of an aircraft carrier which, experts say, is “considered the most valuable sea-based asset, [offering] an incomparable military instrument with its ability to project tactical air power over long distances”.

An aircraft carrier serves as the lead vessel of what is known as a strike or battle group and being equally valuable and vulnerable, is escorted by a host of other vessels, including destroyers, submarines and supply ships on its outings on the high seas.

Such is the importance of an aircraft carrier that the Indian Navy is said to be seeking the construction of a second indigenous vessel of an even bigger size than INS Vikrant although reports say that the political leadership is still assessing the need for a third aircraft carrier.

<https://www.news18.com/news/explainers/explained-why-indigenous-aircraft-carrier-ins-vikrant-puts-india-in-select-group-of-nations-4667084.html>



## Exercise TOPCHI held at Devlali firing ranges

Nashik: Exercise TOPCHI — the annual firepower demonstration and training exercise of the Regiment of Artillery — was conducted by the School of Artillery (Devlali) at the Devlali field firing ranges on January 14.

The event was attended by senior defence and civilian officers, officers from Defence Services Staff College and all ranks of the three services.

The audience were introduced to various Regiment of Artillery equipment, including the newly-inducted Ultra-Light Howitzer M-777, self-propelled Gun K-9 Vajra and indigenous SWATHI Weapon Locating Radar. Subsequently, all artillery firepower and surveillance assets were integrated to support a tactical plan.

Display of guns, rockets, surveillance and target acquisition radars, remotely-piloted aircraft and hi-tech equipment was awe inspiring. Army aviation assets included the Chetak & Cheetah helicopters. One of the highlights of the event was combat free fall by paratroopers from parachute field regiment.

The event demonstrated spectacular firepower capabilities and proficiency of the Regiment of Artillery with precise delivery of fire on to targets. Exercise TOPCHI is a testimony to professionalism of the gunners and the evolving sensor to shooter capabilities of the Indian army.

<https://timesofindia.indiatimes.com/city/nashik/exercise-topchi-held-at-devlali-firing-ranges/articleshow/88961668.cms>



## Eye on China, India to make Russia-made S-400 missile defence system operational from April

### Story highlights

***With threat from China on its mind, India is looking to make the first unit of S-400 Triumph advanced surface-to-air missile defence system operational by this April. All the five units of the system will be deployed in strategic areas to ward off China threat, according to official sources. All these five units may become operational by next year***

New Delhi: With threat from China on its mind, India is looking to make the first unit of S-400 Triumph advanced surface-to-air missile defence system operational by this April.

All the five units of the system will be deployed in strategic areas to ward off China threat, according to official sources. All these five units may become operational by next year.

The Russia-made S-400 system can take down a hostile aircraft or missile at a range between 40km and 400km. It was bought by India in a \$5-billion deal, inked in October 2018.

The advance consignments of two S-400 systems have already arrived in India from Russia. The work to assemble the systems is going on in full swing, by the Indian teams who have been trained by Russia.

The first squadron deliveries are expected to be



India is looking to make the first unit of S-400 Triumph advanced surface-to-air missile defence system operational by this April (representative image). Photograph:( Reuters )

completed by the end of this year. The equipment is being brought to India through both sea and air routes.

The air defence system would give India an edge in South Asia as it would be able to take out enemy aircraft and cruise missiles.

The S-400 missile defence system is equipped with four different missiles, which can engage enemy aircraft, ballistic missiles and AWACS planes at 400 km, 250 km, the medium-range 120 km and the short-range 40 km.

<https://www.wionews.com/india-news/eye-on-china-india-to-make-russia-made-s-400-missile-defence-system-operational-from-april-445322>

# ThePrint

Tue, 18 Jan 2022

## HAL likely to be in fray for Navy's NUHs after defence ministry junks Coast Guard chopper deal

*Last week, the Defence Acquisition Council scrapped the Coast Guard programme to buy 14 twin-engine helicopters under Buy Global category. Other projects under review now.*

*By Snehesh Alex Philip*

New Delhi: The Ministry of Defence is likely to allow state-run Hindustan Aeronautics Ltd (HAL) to bid for the Navy's programme to buy 111 naval utility helicopters (NUHs), as the Narendra Modi government reviews all foreign procurement programmes in favour of indigenous systems, ThePrint has learnt.

The Navy's proposed NUH programme comes under the 'strategic partnership' route, which will allow a selected foreign Original Equipment Manufacturer (OEM) to partner a nominated Indian company to manufacture the choppers domestically.

Sources in the defence and security establishment told ThePrint that the naval programme will come under discussion as soon as the government focuses on pruning the list of projects under the 'Buy Global' category in favour of indigenous projects.

Under the Buy Global category, procurement is done directly from the foreign OEM.

The NUH development comes days after ThePrint reported that the Defence Acquisition Council (DAC), chaired by Defence Minister Rajnath Singh, has scrapped the Coast Guard programme to buy 14 twin-engine helicopters under Buy Global, for which the Airbus was the prime contender.

### NUH programme under focus

The Navy's procurement of 111 NUHs is one of the big programmes that has been pending for a while.

While this programme won't be scrapped — since it is not in the Buy Global category — HAL is likely to be allowed to bid as an OEM, sources said.

In 2019, HAL had stumped the Indian private industry and foreign players when it submitted two bids for the Expression of Interest issued by the Navy for the NUH programme — one by itself and another through its joint venture with Russian Helicopters, which is meant to produce the Kamov chopper.

The industry had then vehemently opposed the inclusion of HAL alleging it "kills the very basis of Strategic Partnership, which was aimed at creating capabilities in the private sector, over and above the existing capabilities in the public sector".



An India Navy Chetak Helicopter (representational image) | [indiannavy.nic.in](http://indiannavy.nic.in)



However, defence sources said the HAL has proven its blade-folding capability to the Navy and if the Coast Guard can forgo plans to buy foreign helicopters in favour of HAL, there is no rationale of not including HAL in the competition for NUH.

ThePrint had reported in 2020 that the NUH programme will be the first major challenge to the Narendra Modi government's 'Aatmanirbhar' (self-reliance) push.

HAL's argument was that the strategic partnership model focused on bringing in technology that India didn't possess, like in the heavier weight lift class.

"But getting something, which is in the same weight class as ALH (Advanced Light Helicopter), it does not make sense," a senior HAL executive had said at the time.

### **Why Buy Global category is being reviewed**

Besides the chopper deal for the Coast Guard, the defence ministry has also scrapped two projects with regard to acquisition of a short range missile, and of all-terrain vehicles for the defence forces, under the Buy Global category.

The Army, Navy, Air Force and the Coast Guard were earlier asked by the defence ministry to prepare a list of foreign-procurement plans that could be replaced by indigenous buys. Accordingly, each service had prepared a list of such items.

Sources said another review meeting will soon be held to take a look at more such items. The cumulative value of these programmes run into several billions of dollars, they said.

They also clarified that the decisions won't impact deals already inked under the Buy Global route or those being pursued under the government-to-government route and the Foreign Military Sales route with the US.

Sources said indigenous systems have been a major focus area of the Modi government and it was felt that there needs to be a marked reduction in direct import. The aim is to buy equipment and systems manufactured by Indian companies or by foreign OEMs who set up production facilities here.

During his recent talks with his Russian and French counterparts, Defence Minister Rajnath Singh had stressed the need to "either collaborate with Indian companies or simply produce in India". He wanted the relationship to move away from a pure buyer-seller perspective to one of co-development and manufacturing, sources said.

The Modi government also sees defence as a sector with huge manufacturing potential, added sources.

<https://theprint.in/defence/hal-likely-to-be-in-fray-for-navys-nuhs-after-defence-ministry-junks-coast-guard-chopper-deal/804990/>



Tue, 18 Jan 2022

## **Atmanirbharta in Indian Army: A Reflection**

*By Saurabh Dwivedi*

The foreign aggressions and wars remain in the collective memory of every Indian as a reminder of sacrifices made by our freedom fighters and soldiers. While we are indebted to the Indian army, Air force and Navy for protecting our sovereignty, integrity and national interests, the role of the Indian Army is paramount, keeping in mind that any confrontation with either neighbour – China or Pakistan – will be mainly fought by Indian ground forces. Thus, the Indian army plays a significant role in preventing the belligerence of enemies at our borders. For instance, in 2020, when we had witnessed Chinese aggression at Galwan valley, it was the Indian army who gave a befitting response to the Chinese aggression.

As rightly said by former Prime Minister Atal Bihari Vajpayee, "*We can choose our friends but not our neighbours*", the possibility of aggression from China and Pakistan is unavoidable.

Therefore, it is inevitable for India to strengthen and modernize its defence forces so as to prepare itself against any kind of expansionism, and cement its presence as a regional superpower in South Asia. Against this background, this article attempts to reflect on the indigenization process of the Indian Armed Forces, particularly the Indian Army.

While indigenization of the Indian Army is critical for national security, it also keeps intact the technological expertise within the borders and is evidently needed to boost the strategic capabilities. It also helps in employment generation and acts as a catalyst to nationalism and patriotism. It will not only solidify the trust and confidence of Indian forces but will also bolster a sense of integrity and sovereignty. In this context, when we talk about Atmanirbhar Bharat, the legacy of Lokmanya Tilak's economic nationalism is reflected in the initiative launched by Prime Minister Narendra Modi. Considering the vast potential of India in various sectors, this unique initiative, 'Atmanirbhar Bharat Abhiyaan' campaign not only aims to make India a self-reliant country from economic perspectives but in all spheres including defence.

In order to make this campaign more efficient and result-oriented, which ultimately helps in making India a manufacturing hub and self-sustained country, initiatives like Digital India Mission and Make in India are accelerating the desired changes in manufacturing sectors. Since the launch of this flagship campaign, the government of India has made several bold reforms in various sectors which also includes defence areas, to achieve self-reliance in defence manufacturing.

Against this context, the Ministry of defence has already scrapped multiple defence import projects in a bid to promote the Atmanirbhar Bharat initiative. These projects will be further provided to the Indian private defence manufacturers. This decision from the central government comes at a time when the Centre is finalizing the new Defence Production and Export Promotion Policy which will pave the way ahead for boosting defence production within the country and help facilitate their export to friendly foreign countries.

Besides, the Defence Ministry has also approved proposals worth Rs 7,965 crore for modernization of the Armed Forces under 'Make in India'. Furthermore, Defence Ministry in its statement said, "*All of these proposals (100 per cent) are under 'Make in India' with focus on design, development and manufacturing in India*". According to the Minister of Defence, Rajnath Singh, in the past seven years, India has exported defence-related products worth Rs 38,000 crore, now the government wants to achieve the defence export target of Rs 35,000 crore by 2024-25, adding that the country is exporting defence equipment to around 70 countries.

He further mentioned that the country will soon become a state-of-the-art technology provider not only for the Indian armed forces, but for the world. More recently, the Philippines has approved a \$374.96 million contract for the purchase of a shore-based anti-ship variant of the BrahMos missile from India. This is the first export order of the BrahMos supersonic cruise missile system which is jointly developed by India and Russia.

If we talk about the indigenization of the Indian Army, the ongoing indigenization process is running at full pace. Earlier, India had stopped imports of 101 weapons and platforms including sniper rifles, towed artillery guns, surface to air missiles, howitzers, bullet-proof jackets, radar warning receivers, missile defence systems, helicopters among others. Under the able leadership of former Chief of Defence Staff late Gen. Bipin Rawat, the self-reliance in all three wings of Indian armed forces, air, naval and land was of utmost importance, he was a strong votary of self-reliant India and was instrumental in starting indigenous production of many arms and equipment within India.

The induction of Indian-made artillery and weapons is one of the key reasons behind the growth of the Indian defence manufacturing environment. Underlining the country's progress in the field of indigenous production of defence systems and mechanisms, Chief of Army Staff, General Manoj Mukund Naravane said that the Indian Army has been undergoing full-fledged modernization and the Armed Forces have been increasingly looking at indigenous solutions for its operational needs. In December 2020, the Ministry of Defence cleared the induction of 180 Arjun Mark-1A tanks in the Indian Army. These battle tanks are indigenously produced by the Defence Research & Development Organization (DRDO).

In this regard, the Indian private companies are now getting the desired recognition in defence manufacturing. Companies like Larsen and Toubro, Bharat Forge and Mahindra are getting contracts from the government on a priority basis. Earlier, the defence wing of Larsen & Toubro had been awarded an important contract by the Ministry of Defence for the supply of four regiments of Pinaka weapon systems which have been already deployed at the China front, significantly strengthening the defence capabilities of the Indian Army. The TATA Group, Bharat Forge and Mahindra Defence are making heavy armoured protection vehicles for the Indian Army to ensure better mobility and protection for infantry soldiers.

The Indian Army has also ordered an advanced version of 'SWITCH tactical UAV' drone, indigenously developed by an Indian company, ideaForge. These specialized drones are made to operate in high altitude areas like Ladakh and Kashmir. Moreover, to give a further thrust to the Indian defence ecosystem, the State-owned Ordnance Factory Board (OFB) has been split into seven different companies which will work in seven different areas. It is pertinent to mention that the new Defence PSUs are 100 per cent government-owned corporate entities which will help in improving the country's self-reliance in defence preparedness.

If the Indian government continues with the same spirit of modernizing the defence forces with the help of indigenization, it will certainly bring big changes on the ground, preparing the land force for any sort of threats posed by potential adversaries. Given the defence export potential of India, indigenization can also give a big boost to the Indian economy. The efforts of the involved stakeholders, policymakers and successful implementation of the self-indigenization campaign will be pivotal in realizing this dream.

It may be noted that with proper support and assistance of the Government, the manufacturers will be able to fulfil the demands of armed forces, and will also strengthen their position to confront the challenges/ threats effectively. As India is moving forward with the unique Atmanirbhar Bharat campaign, it can help facilitate the need of being battle-ready, even on any sort of sudden attacks. Undoubtedly, the concept of Atmanirbharta envisioned by PM Modi will certainly help to build a new and strong India. Courtesy: Opindia

<https://www.thenorthlines.com/atmanirbharta-in-indian-army-a-reflection/>

## THE ECONOMIC TIMES

Tue, 18 Jan 2022

### **View: How the Budget can add more firepower to India's defence manufacturing**

*By Gaurav Mehndiratta*

#### *Synopsis*

***While the Government has taken a number of constructive measures to actualise its dream of an 'Aatma-nirbhar Bharat', a lot still needs to be done before we can claim the coveted title of a defence manufacturer.***

A country that depends on imports for its defence equipment can never be strong. Therefore, being self-sufficient in the defence sector is very important and it is linked to the 'self-respect' and 'sovereignty' of our country. This has long been the sentiment of our Defence Minister and the corridors of Indian Ministry of Defence (MoD).

While the government has taken a number of constructive measures to actualise its dream of an 'Aatma-nirbhar Bharat', a lot still needs to be done before we can claim the coveted title of a defence manufacturer.

In order for an industry to flourish, it is pertinent to strengthen and develop private industry while ensuring that public and national security interests are not compromised. When it comes to defence manufacturing, Government's reliance on Public Sector Undertakings (PSUs) to be the

flagbearer of capabilities in the sector needs to be realigned. The capabilities of Public and Private sector need to be integrated, developing this into a strategic partnership for achieving self-reliance in defence production. Major steps in that direction were taken during the policy changes which were announced in the last 18 months including increase in foreign direct investment limit to 74 percent under the automatic route, a list of reserved items to be sourced from India only and other important changes in the Defence Acquisition Procedure (DAP) 2020.

The forthcoming annual budget can further contribute to this goal in two ways. Firstly, by ensuring a requisite capital budget allocation for modernizing Indian Aerospace and Defence (A&D) and thereby ensuring sustained demand in a sector where Government is the sole buyer. Secondly, by introducing tax incentives to create a more conducive and lucrative environment for A&D players in India. Considering the government's focus on development of Indian A&D sector, following reforms/ allocations are expected from the Government in its budget for 2022:

#### **Allocation related aspects**

- Last year's capital budget allocation of INR 135,061 crores (~USD 18.91 Bn[1]) reflected a steep increase of 19 percent in procurement outlay. The current allocation is expected to maintain this degree of increase in order to ensure streamlined acquisitions of critical platforms which are currently underway.
- In line with principles laid down in the draft Defence Production and Export Promotion Policy, the Ministry is expected to earmark a definite percentage of the total capital allocation on domestic procurement this year as well, with a 15 percent increase in last year's domestic allocation.

#### **Taxation related aspects**

- Production linked incentive (PLI) schemes have made significant contributions in expediting development of sectors like automobiles and pharmaceuticals. Recently, a PLI scheme was introduced for manufacture of drones; similar schemes should be implemented for manufacturing defence products as well.
- The role of tax holidays in developing a nascent sector cannot be overlooked. The Government may consider offering a 100 percent tax exemption for a predefined initial period with respect to greenfield projects in defence manufacturing.
- Under extant tax laws, a preferential rate of 15 percent is available for new companies which set up manufacturing operations on or before March 2023. The deadline for undertaking manufacturing operations may be extended for state-of-the-art defence projects which involve huge investment and time cost.
- Further, to foster the spirit of innovation in the currently embryonic defence technology space, weighted deductions may be allowed for undertaking research and development (R&D) in defence and for investing in R&D facilities set up specifically for this purpose. Along the same lines, domestic players may be allowed weighted deductions for costs incurred on acquiring and integrating foreign technology.
- Goods and Services Tax (GST) constitutes a major cost to the defence sector. The Government may consider introducing exemptions for import of strategic and critical components for indigenous manufacturing of defence platforms. Such benefits may also be extended to import of locally unavailable raw materials which are indispensable for producing aerospace and defence components.
- The recent amendment to the customs exemption notification due to realignment of Customs Tariff Codes has led to increase in customs duty rate on import of parts of aircrafts falling



With Government's ambitious vision of achieving a turnover of INR 175,000 Crore (~ USD 24.5 Bn) including exports of INR 35,000 Crore (~ USD 4.9 Bn) in A&D goods and services by 2025, all eyes are on the Government to align its actions in the forthcoming budget with its vision of a self-reliant Indian defence sector.

under any chapter heading of Custom Tariff. A relook at this would help in supporting this sector.

- Another important aspect for bringing private-public parity is the extension of GST/ Customs exemptions. Such exemptions on import of defence equipment are currently available to MoD/Defence PSU/Defence Forces/PSU for Defence Forces only. The Government may consider extending their applicability to private defence players as well.

With Government's ambitious vision of achieving a turnover of INR 175,000 Crore (~ USD 24.5 Bn) including exports of INR 35,000 Crore (~ USD 4.9 Bn) in A&D goods and services by 2025, all eyes are on the Government to align its actions in the forthcoming budget with its vision of a self-reliant Indian defence sector.

*With inputs from Chartered Accountants, Manan Asri and Srishti Sharma.*

*(Disclaimer: The opinions expressed in this column are that of the writer. The facts and opinions expressed here do not reflect the views of [www.economictimes.com](http://www.economictimes.com).)*

<https://economictimes.indiatimes.com/news/defence/view-how-the-budget-can-add-more-firepower-to-indias-defence-manufacturing/articleshow/88948872.cms?from=mdr>

## Science & Technology News



Tue, 18 Jan 2022

# Superabsorption unlocks key to next-generation quantum batteries

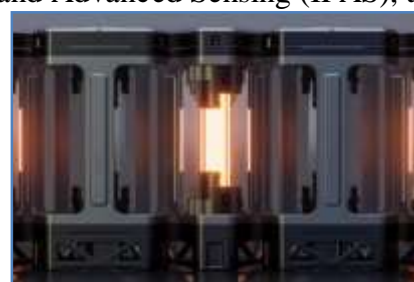
*By Crispin Savage*

Researchers at the University of Adelaide and their overseas partners have taken a key step in making quantum batteries a reality. They have successfully proved the concept of superabsorption, a crucial idea underpinning quantum batteries.

"Quantum batteries, which use quantum mechanical principles to enhance their capabilities, require less charging time the bigger they get," said Dr. James Q. Quach, who is a Ramsay Fellow in the School of Physical Sciences and the Institute for Photonics and Advanced Sensing (IPAS), at the University of Adelaide.

"It is theoretically possible that the charging power of quantum batteries increases faster than the size of the battery which could allow new ways to speed charging."

To prove the concept of superabsorption, the team—who published their findings in the journal *Science Advances*—built several wafer-like microcavities of different sizes which contained different numbers of organic molecules. Each was charged using a laser.



Credit: University of Adelaide

"The active layer of the microcavity contains organic semiconductor materials that store the energy. Underlying the superabsorbing effect of the quantum batteries is the idea that all the molecules act collectively through a property known as quantum superposition," said Dr. Quach.

"As the microcavity size increased and the number of molecules increased, the charging time decreased.

"This is a significant breakthrough, and marks a major milestone in the development of the quantum battery."

The idea of the quantum battery has the potential to significantly impact energy capture and storage in renewable energy and in miniature electronic devices.

By 2040, energy consumed by people is expected to have increased by 28 percent from 2015 levels. The majority of energy will still come from fossil fuels at great cost to the environment. A battery that is capable of harvesting and storing light energy simultaneously would provide significant cost reduction while reducing the unpredictability of energy from solar technologies.

A new vista in battery technology, driven by the power of quantum mechanics, could become a reality by applying the team's work.

"The concepts that Dr. Quach and his team have worked on opens up the possibility of a new class of compact and powerful energy-storing devices," said the University of Adelaide's Professor Peter Veitch, Head of School of Physical Sciences.

The next step is to develop a fully functioning quantum battery prototype.

**More information:** James Q. Quach et al, Superabsorption in an organic microcavity: Toward a quantum battery, *Science Advances* (2022). DOI: [10.1126/sciadv.abk3160](https://doi.org/10.1126/sciadv.abk3160)

**Journal information:** [Science Advances](https://phys.org/news/2022-01-superabsorption-key-next-generation-quantum-batteries.html)  
<https://phys.org/news/2022-01-superabsorption-key-next-generation-quantum-batteries.html>



