

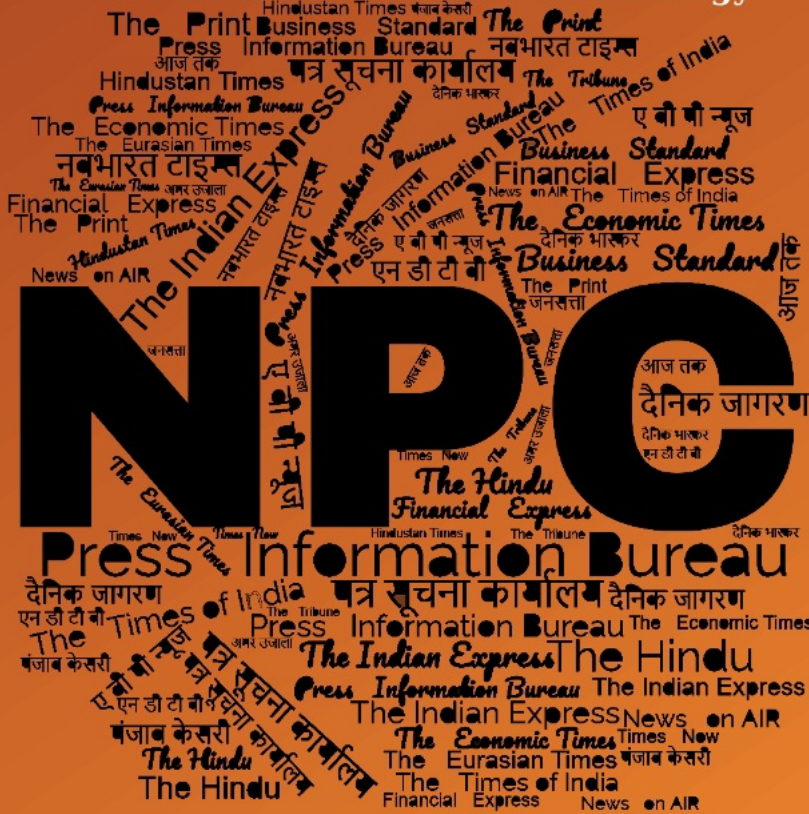
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# समाचार पत्रों के चयनित अंश Newspapers Clippings

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

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Tue, 19 Nov 2024

## वॉर जोन में चीन-PAK के लिए कैसे बड़ा चैलेंज साबित होगा भारत का नया सीक्रेट मिसाइल मिशन

अभी भारत ने लॉन्ग रेंज एंटी-शिप मिसाइल (LRAShM) का परीक्षण किया. इसने हाइपरसोनिक गति हासिल की. रेंज भी 1500 किलोमीटर से ज्यादा है. इंटरनेट पर चर्चा शुरू हो गई है कि ये हाइपरसोनिक है या नहीं. कुछ लोग पक्ष में खड़े हैं. कुछ लोग इस मिसाइल के हाइपरसोनिक होने पर सवाल उठा रहे हैं.

ये चर्चा उन विद्वानों के लिए है जो किसी मिसाइल को कई तकनीकी स्तर पर आंकते हैं. लेकिन आम आदमी के लिए मिसाइल का मतलब क्या होता है. उसकी रेंज, उसकी स्पीड और कितनी तबाही. असली मजा तो अगले साल आएगा जब भारत लॉन्ग ड्यूरेशन हाइपरसोनिक क्रूज मिसाइल (Long Duration Hypersonic Cruise Missile - LDHCM) का परीक्षण करेगा. जिसे प्रोजेक्ट विष्णु (Project Vishnu) के तहत बनाया जा रहा है.

इस मिसाइल, प्रोजेक्ट या तकनीक के बारे में आधिकारिक तौर पर कहीं कुछ मौजूद नहीं है. लेकिन डिफेंस की बारीकियों, तकनीकों और आधुनिकता पर नजर रखने वाले डिटर हैंडल्स, वेबसाइट्स को खंगालेंगे तो भारत की इस सीक्रेट मिसाइल प्रोजेक्ट के बारे में आपको पता चलेगा. संभावना है कि LDHCM का पहला स्टेज LRAShM जैसा हो.

### क्या है प्रोजेक्ट विष्णु

जिसमें बन रही है खतरनाक मिसाइल भारतीय रक्षा अनुसंधान संगठन (DRDO) हाइपरसोनिक क्रूज मिसाइल बनाने के लिए प्रोजेक्ट विष्णु लेकर आई है. यह ऐसा प्रोजेक्ट है, जिस पर ज्यादा चर्चा नहीं होती. यह बेहद सीक्रेट है. मकसद है हाइपरसोनिक टेक्नोलॉजी डेमॉन्स्ट्रेटर व्हीकल (HSTDV) को विकसित करना. इसका परीक्षण भी हो चुका है.

### नए हाइपरसोनिक हथियार का परीक्षण भी हो चुका है

डीआरडीओ ने मानव रहित स्क्रेमजेट का हाइपरसोनिक स्पीड फ्लाइट का सफल टेस्ट साल 2020 में किया था. HSTDV की यह टेस्टिंग 20 सेकंड से भी कम समय की थी. इसमें 7500 km/hr की गति हासिल हुई थी. पिछले साल 27 जनवरी को ओडिशा तट के पास HSTDV का परीक्षण किया गया था. टेस्ट में क्या नतीजे आए थे, उसके बारे में किसी तरह का खुलासा नहीं किया गया था.

### पाकिस्तान-चीन की हालत हो जाएगी खरा

HSTDV ने जब 20 सेकंड के लिए 7500 km/hr गति हासिल की थी, तभी पता चल गया था कि इससे हथियार से कुछ ही सेकंड में पाकिस्तान और चीन के किसी भी इलाके में सटीक हमला किया जा सकता है. भविष्य में इसकी गति को घटाया या बढ़ाया जा सकता है. अगर इसमें पारंपरिक या परमाणु हथियार लगाकर दागते हैं, तो बर्बादी भयानक होगी.

## क्यों जरूरत पड़ी इस गति वाली हथियार की?

सवाल ये उठता है कि हाइपरसोनिक मिसाइल या विमान की जरूरत क्यों पड़ रही हैं. इसकी वजह है अमेरिका. अमेरिका पिछले कुछ सालों से लगातार हाइपरसोनिक मिसाइल और विमान बनाने में जुटा है. जबकि रूस उससे आगे निकल चुका है. रूस के पास कई हाइपरसोनिक मिसाइलें हैं. चीन के पास भी इस तरह के हथियार मौजूद हैं. ऐसे में जरूरी है कि संतुलन और शांति बनाए रखने के लिए हाइपरसोनिक हथियार भारत के पास भी हो.

<https://www.aajtak.in/defence-news/story/what-is-project-vishnu-under-which-long-duration-hypersonic-cruise-missile-will-be-tested-dskc-2100160-2024-11-19>



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

**Ministry of Defence**

**Tue, 19 Nov 2024**

## **Hon' ble Raksha Mantri Addresses Air Force Commanders' Conference**

The Hon'ble Raksha Mantri, Shri Rajnath Singh, addressed the Air Force Commanders' Conference (AFCC) at Air Headquarters in New Delhi today. The conference was attended by Chief of Defence Staff (CDS), General Anil Chauhan, Defence Secretary Shri Rajesh Kumar Singh, Secretary (DDR&D) and **Chairman DRDO Dr. Samir V. Kamat**, Secretary (Defence Production) Mr Sanjay Kumar and senior commanders of the Indian Air Force (IAF).

Upon his arrival at Air Headquarters, the Hon'ble Raksha Mantri was welcomed by the Chief of the Air Staff (CAS), Air Chief Marshal AP Singh. The Hon'ble Raksha Mantri was briefed on the operational capabilities of the IAF.

Addressing the gathering, Shri Rajnath Singh commended the force for its dedication and professionalism in safeguarding the nation's sovereignty. He expressed confidence in the IAF's ability to adapt to evolving challenges, and exhorted Commanders and senior officials of the MoD to look at means to make the process of capability and capacity building more efficient and effective, in keeping with our national aims and aspirations.

The ongoing conference has witnessed in-depth discussions on key operational, administrative, and strategic issues. The apex leadership also interacted with the CDS, Chief of the Army Staff and Chief of the Naval Staff to foster synergy.

This conference serves as a vital platform for the IAF's senior leadership to deliberate on current challenges and strategize future actions to maintain operational excellence and Atmanirbharta in defence capabilities.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2074689>

## Defence News

### Defence Strategic: National/International



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Tue, 19 Nov 2024*

### **ICG conducts 136th Offshore Security Coordination Committee meeting to review security preparedness of India's offshore installations**

Indian Coast Guard (ICG) conducted the 136th Offshore Security Coordination Committee (OSCC) meeting at Hyderabad, Telangana on November 19, 2024, to review the preparedness and effectiveness of the security of India's offshore installations. In his address, Director General, ICG Paramesh Sivamani underlined the importance of energy security and insisted on taking all possible measures to ensure security of the offshore assets.

The OSCC meeting was attended by members and participants from concerned ministries and agencies including ICG, Indian Navy, Indian Air Force, Oil and Natural Gas Corporation, Directorate General of Hydrocarbons, and DG Shipping. The committee was constituted in 1978 to ensure effective functioning of offshore security arrangements. It has, since then, contributed effectively in framing policies and providing guidance and resolution to related issues.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2074683>



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Tue, 19 Nov 2024*

### **Indian Army Successfully Concludes Multi Agency Disaster Relief Exercise 'Sanyukt Vimochan 2024'**

The Indian Army successfully conducted the Multilateral Annual Joint Humanitarian Assistance and Disaster Relief (HADR) Exercise, 'Sanyukt Vimochan 2024' at Ahmedabad and Porbandar on 18-19 November 2024. General Upendra Dwivedi, Chief of the Army Staff attended this significant event which showcased India's disaster response readiness.

The exercise conducted by the Konark Corps of Southern Command of Indian Army, was conducted over two days from 18 to 19th November 2024 at Ahmedabad and Porbandar, Gujarat. The inaugural event of the exercise at Ahmedabad on 18th November 2024 featured a Table Top Exercise, focusing on the theme of 'Cyclone in Coastal Region of Gujarat'. Representatives from National Disaster Management Authority (NDMA), Gujarat State Disaster Management Authority (GSDMA), Meteorological Department and FICCI attended the event along with Indian Armed Forces officials. The second day witnessed Multi-Agency Capability Demonstration held at Chowpatty Beach at Porbandar on 19 November 24.

The Multi-Agency Capability Demonstration featured various agencies practicing coordinated logistics, rapid response and effective disaster management strategies in a simulated cyclone scenario. This event highlighted the collaborative efforts of the Indian Army, Indian Navy, Indian Airforce, Indian Coast Guard, National Disaster Response Force, State Disaster Response Force & other Central & State Agencies in addressing natural disasters.

The demonstration started with Requisition for the Armed Forces from civil administration. Multi Agency recce and surveillance was carried out of the affected area, post which personnel were inserted for carrying out rescue operations. Casualty evacuation was demonstrated with assistance from the assets fielded during the exercise. The demonstration culminated with 'Resuscitation and Rehabilitation' of affected citizens.

In alignment with the Atmanirbhar Bharat initiative, an Industrial Display was also organized alongside the demonstration, providing a platform for Indian defence industries to showcase their innovations and manufacturing capabilities in disaster response technology. This event underscored India's commitment to self-reliance and technological advancement in disaster management.

Gen Upendra Dwivedi, Chief of the Army Staff lauded all participants for their efforts and dedication for organising this professionally conducted exercise and executing it with excellence and finesse. The COAS reinforced India's commitment to Global Humanitarian Efforts wherein it has consistently emerged as a beacon of hope and assistance to many across the world in times of their crisis, in extending vital assistance to Nations as well as peoples in distress. "The Indian Armed Forces", he said, "has in recent years, played a pivotal role in disaster relief operations, including search and rescue missions, provision of humanitarian aid and medical support". The COAS also commended participants from Indian Industries, who had showcased indigenous HADR equipment, in line with the Government's vision of a developed, self-reliant India. He extended his sincere gratitude to the State Government of Gujarat and Industrial Partners, including the Federation of Indian Chambers of Commerce & Industry (FICCI) for their support to the Indian military as well as for their active involvement in this exercise. The COAS also appreciated the participation of Foreign Delegates, which expounded the Indian philosophy of "Vasudhaiva Kutumbakam" - the "World as One Family", consistently championed by the Hon'ble Prime Minister.

The opening event of the exercise on 18 November 2024 included a Tabletop Exercise (TTX) centered on the theme 'Cyclone in the Coastal Region of Gujarat.' The exercise simulated a disaster scenario affecting the cyclone-prone Okha-Porbandar coastline, where all participating agencies brainstormed disaster relief strategies and establishing effective joint mechanisms for implementation of those strategies. It aimed at addressing gaps in interagency integration and cooperation, ensuring a swift and coordinated response to natural disasters. The TTX was attended by members of NDMA led by Lt Gen Ata Hasnain (Retd) and other senior functionaries of Armed Forces, State Disaster Management Authority, other Central and State Governmental agencies and industry, besides representatives from nine Friendly Foreign Countries.

15 Senior officials and representatives from Nine Friendly Foreign Countries from the Gulf Cooperation Council, Indian Ocean Region and South East Asia attended this significant event on both days. Their participation underscored the importance of international collaboration, allowing for the exchange of best practices, domain knowledge, and experience in disaster management. Exercise 'Sanyukt Vimochan 2024' represented a significant step towards strengthening India's preparedness and response capabilities, solidifying its leadership in disaster management at the global stage.

The Annual Joint Humanitarian Assistance and Disaster Relief (HADR) Exercise, 'Sanyukt Vimochan 2024' has not only enhanced our national disaster response capabilities but also added valuable contributions to the global dialogue on Humanitarian Assistance and Disaster Relief.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2074664>



Wed, 20 Nov 2024

## **Defence to space, India & Italy announce 5-year action plan**

Prime Minister Narendra Modi and his Italian counterpart Giorgia Meloni announced a five-year strategic action plan outlining their vision for collaboration in a range of key sectors, including defence, trade, energy and space.

The two leaders unveiled the Joint Strategic Action Plan 2025-29 as they met on the sidelines of the G20 Summit in Rio de Janeiro, Brazil.

“Our talks centred around deepening ties in defence, security, trade and technology. We also talked about how to boost cooperation in culture, education and other such areas,” Modi wrote on X. “India-Italy friendship can greatly contribute to a better planet”.

Monday’s meeting was the fifth between the two PMs in the last two years. They last met in June 2024, in Puglia, Italy, during the G7 Summit. “Following up on their discussions in Puglia, the two leaders reiterated their commitment to advancing the India-Italy Strategic Partnership and announced a Joint Strategic Action Plan 2025-29 which outlines their vision for the next five years,” the Ministry of External Affairs said.

Some of the key points in the Action Plan are:

### **Defence**

Holding Joint Defence Consultative meetings, Joint Staff Talks on a yearly basis to coordinate exchanges of information, visits and training activities.

Interactions in the framework of Italy’s growing interest in Indo-Pacific region, aimed at increasing interoperability and cooperation.

Exploring avenues of enhanced partnerships and dialogue among public and private stakeholders, focusing on technology collaboration.

### **Economic Cooperation**

Promoting industrial partnerships, technological centres and mutual investment, also in automotive, semiconductors, infrastructure and advanced manufacturing.

## **Connectivity**

Enhancing collaboration in maritime and land infrastructure also in the framework of the India-Middle East-Europe Economic Corridor.

## **Science & Innovation**

Expanding cooperation on critical and emerging technologies, forging technology value chain partnerships in both countries in sectors such as telecom, artificial intelligence, and digitalization of services.

## **Space**

Expanding cooperation between Italian Space Agency and ISRO to include projects of common interest in Earth observation, heliophysics and space exploration with emphasis on lunar science.

## **Migration and Mobility**

Promote legal migration channels, as well as fair and transparent labour training and recruitment procedures. A pilot will cover training of health professionals in India and their subsequent employment in Italy.

## **Energy Transition**

Strengthen the Global Biofuels Alliance and International Solar Alliance.

<https://indianexpress.com/article/india/defence-to-space-india-italy-announce-5-year-action-plan-9678592/>

# THE ECONOMIC TIMES

*Tue, 19 Nov 2024*

## **Indian Army, Navy and Air Force conduct Poorvi Prahar exercise and demonstrate warfighting skills**

In a significant display of military prowess, the Indian Army, Indian Navy, and Indian Air Force jointly conducted exercise 'Poorvi Prahar' over nine days, demonstrating their unmatched warfighting skills in nearreal combat scenarios.

This comprehensive exercise validated the effectiveness of joint structures in intelligence gathering, surveillance, reconnaissance, rapid mobilization, deployment/redeployment, and operational logistics. The exercise highlighted the exceptional capabilities of the Indian Armed Forces as the units exhibited precision strike capabilities utilizing high-tech equipment to guarantee mission success.

The exercise showcased the strength of integration amongst the services and the evolved civil-military fusion essential for ensuring victory in operations. Lt Gen RC Tiwari, UYSM, AVSM, SM, General Officer Commanding in Chief, Eastern Command, and Air Marshal IS Walia, AVSM, VM, Senior Staff Administrative Officer from Eastern Air Command actively participated in the exercise, witnessing offensive manoeuvres in mountainous terrain supported by cutting-edge weaponry and equipment.

Appreciating the clockwork precision exhibited by the participating troops, the Army Commander emphasized the importance of joint structures and mechanisms to enhance synergy among the Indian Army, Indian Navy, and Indian Air Force.

Integrated joint operations were conducted across multiple domains for the first time on such a large scale in the Eastern Theatre. The exercise was a full-fledged display of the might of the Indian Armed Forces, featuring advanced weapons systems such as the M-777 Howitzer, the Navy's Maritime Patrol and Reconnaissance aircraft P-8I, swarm drones, First Person View (FPV) drones, and loitering munitions.

Additionally, the latest helicopters like the Chinook and Light Combat Helicopter Prachand were employed to enhance operational effectiveness. During Ex Poorvi Prahar, the Indian Armed Forces demonstrated their unmatched combat capabilities by executing complex operations that incorporated air, land, and sea elements.

The successful integration of third-dimensional warfare was adequately bolstered by new generation equipment, showcasing precision and efficiency in challenging terrain and dense Electronic Warfare environment.

The exercise also involved a tri-services combat free fall on an objective for the special forces. The exercise stands as a testament to India's commitment to maintaining a robust defence posture through synergy and integration among its armed forces. The successful execution of this joint exercise not only reinforces the operational readiness of the Indian Armed Forces but also assures the nation that we are prepared to address any security challenge that may arise in the future.

<https://economictimes.indiatimes.com/news/defence/indian-army-navy-and-air-force-conduct-poorvi-prahar-exercise-and-demonstrate-warfighting-skills/articleshow/115441979.cms>

# THE ECONOMIC TIMES

*Tue, 19 Nov 2024*

## **India, China discuss next steps in ties following disengagement process in eastern Ladakh**

External Affairs Minister S Jaishankar and his Chinese counterpart Wang Yi deliberated on the next steps in India-China ties at a meeting in Rio de Janeiro, in the first high-level engagement since the militaries of the two sides disengaged from Demchok and Depsang in eastern Ladakh. Jaishankar and Wang held the delegation-level talks on the sidelines of the G20 Summit late on Monday.

In a post on 'X', the external affairs minister said both sides noted the progress in the recent disengagement of the border areas and exchanged views on the next steps in the bilateral ties. It is learnt that both sides are in the process of reviving various dialogue mechanisms including the special representatives talks on the boundary question as decided at a meeting between Prime Minister Narendra Modi and Chinese President Xi Jinping in the Russian city of Kazan last month.

Days after the two sides reached an agreement on October 21 on disengagement in Demchok and Depsang, Indian and Chinese militaries completed the process marking a virtual end to over four-year standoff in the two friction points. The two sides also resumed patrolling activities in these areas after a gap of almost four-and-a-half years.

"On the sidelines of the G20 Summit in Rio, met CPC Politburo member and FM Wang Yi of China," Jaishankar said. "We noted the progress in the recent disengagement in the India-China border areas. And exchanged views on the next steps in our bilateral ties. "Also discussed the global situation," he said.

In his opening remarks at the talks, Jaishankar referred to the meeting between Modi and Xi on October 23 on the sidelines of the BRICS summit.

"In Kazan, our leaders reached a consensus on taking the next steps in our relationship, bearing in mind the understanding of October 21. I am glad to note that on the ground, the implementation of that understanding has proceeded as planned," he said.

"Our leaders have directed that the Foreign Ministers and the Special Representatives should meet at an early date. Some progress, some discussions have happened in that direction," he said. In the meeting, Jaishankar and Wang discussed the next steps. The external affairs minister also noted the importance of India-China ties in his remarks.

"First of all let me say it is very good to meet on the sidelines of the G20. We saw each other recently on the sidelines of the BRICS as you noted. "And our contribution to both platforms was notable in shaping the eventual outcomes," he said.

"But it was a reminder to us of the importance of our two countries in international politics. It was also an equally significant testimony of why our bilateral relations are so important," he added. People familiar with the latest developments in India-China relations said the Special Representative dialogue will be the next significant forward movement.

India's Special Representative for the dialogue is NSA Ajit Doval while the Chinese side is headed at the talks by Foreign Minister Wang. After the completion of disengagement, Indian and the Chinese militaries are carrying out one round of patrolling each in Depsang and Demchok, people familiar with the matter said.

At the same time, they said the two sides have maintained their deployment of troops along the LAC and the focus now will be on de-escalation of the overall situation. Each side currently has around 50,000 to 60,000 troops along the LAC in the region.

Talks at multiple levels are underway towards de-escalation, the people said. After India and China reached the agreement on October 21 for disengagement in Depsang and Demchok, Army Chief Gen Upendra Dwivedi said the Indian military is trying to restore "trust" and both sides will have to "reassure each other" to achieve this objective. Two days after the pact was sealed, Modi and Xi held talks in the Russian city of Kazan.

The two leaders endorsed the agreement on patrolling and disengagement and issued directions to revive various bilateral dialogue mechanisms, signalling attempts to normalise ties. In the nearly 50-minute meeting held on the sidelines of the BRICS summit, Modi underscored the importance of properly handling differences and disputes and not allowing them to disturb peace and tranquility in border areas.

The prime minister said mutual trust, mutual respect and mutual sensitivity should remain the basis of the relations. India has been maintaining that its ties with China cannot be normal unless there is peace in the border areas. In an address at an event on Saturday in Delhi, Jaishankar said the disengagement part of the "problem" with China along the Line of Actual Control (LAC) in eastern Ladakh has been put to rest and the focus should now be on de-escalation.

It is "reasonable" to expect some improvement in the relations following the final round of disengagement, he said but hesitated to say that there could be a reset of ties.

The eastern Ladakh border standoff erupted on May 5, 2020, following a violent clash in the Pangong Lake area.

<https://economictimes.indiatimes.com/news/defence/india-china-discuss-next-steps-in-ties-following-disengagement-process-in-eastern-ladakh/articleshow/115448884.cms>



*Tue, 19 Nov 2024*

## **IAF signs MoA with IISc and Foundation for Science Innovation and Development**

The Headquarter Maintenance Command of the Indian Air Force (IAF) has entered into a Memorandum of Agreement (MoA) with Indian Institute of Science (IISc.) and Foundation for Science Innovation and Development (FSID), Bengaluru on November 18.

The MoA includes jointly identifying problem areas of IAF in maintenance and servicing of equipment related to radar, aircraft, IT and communication platforms and developing a strategic road map for reliability-centered maintenance through Research and Development.

This will also include Artificial Intelligence (AI), Machine Learning (ML), Digital Twin based technologies for lifecycle management, productive maintenance and asset planning. The Ministry of Defence expects the MoA to enable the two organisations to access testing facilities available with each other for mutual benefit.

It will also enable IAF in enhancing academic interaction with IISc towards Post Graduate Programs and support in collaborative R&D efforts. This collaboration will give a boost to self-reliance under Atmanirbhar Bharat, and encourage startups, MSME and other industrial setups to participate in defence indigenisation programs.

<https://www.thehindu.com/news/cities/bangalore/iaf-signs-moa-with-iisc-and-foundation-for-science-innovation-and-development/article68882543.ece>



*Tue, 19 Nov 2024*

## **A 200-Year Legacy In Jeopardy: Why Nepali Gorkhas May No Longer Serve In Indian Army**

The Gorkha Regiment, known for their fierce loyalty and unmatched courage, served in the armies of three nations – India, the UK, and Nepal – for over 200 years. However, this longstanding relationship is now facing a significant rupture, with Nepal halting the recruitment of Nepali Gorkhas to the Indian Army. This shift is poised to fundamentally alter the composition of the Indian Army's Gorkha regiments, potentially leaving them without a single Nepali Gorkha within the next decade.

For over two centuries, the Gorkha Regiment has been a symbol of heroism with its soldiers earning a legendary reputation across the globe. Historically, the regiment has been a unique blend of Nepali and Indian Gorkhas, serving in the armies of India, the UK, and Nepal. In recent years, however, the Indian Army has seen a sharp decline in the number of Nepali Gorkhas joining its ranks. Nepal's decision to stop sending recruits to India, coupled with the new Agnipath recruitment scheme, has left a significant gap in the Gorkha regiments.

Since 2019, not a single Nepali Gorkha has been recruited to the Indian Army, and the number of Nepali Gorkhas in active service has dwindled. As Gorkha soldiers retire, the lack of new recruits from Nepal has become increasingly noticeable. According to experts, this trend could result in a complete absence of Nepali Gorkhas in the Indian Army's Gorkha regiments within the next 10 to 12 years.

At present, the Gorkha Regiment has seen a reduction of around 150 to 200 Nepali Gorkhas in its battalions. To fill the void, the Army has started recruiting soldiers from the Kumaon and Garhwal regions of Uttarakhand. While these soldiers bring their own pride and valour, the absence of Nepali Gorkhas is a significant change for the regiment, which was traditionally made up of Nepali recruits.

Nepal's decision not to send its citizens to serve in the Indian Army is believed to be linked to India's introduction of the Agnipath scheme, which has faced significant controversy in Nepal. Since the scheme's introduction, Nepal has refused to allow any recruitment rallies in its territory, making it increasingly difficult for the Army to replenish its Gorkha regiments with Nepali soldiers.

The situation has become so dire that some military analysts predict that within a decade, there will be no Nepali Gorkhas left in the Indian Army's Gorkha Regiment.

As Nepal's ties with India become more strained, other countries are turning their attention to the Gorkha community. Reports suggest that China has shown interest in recruiting Nepali Gorkhas for its own military. With China and Nepal's relationship improving, the possibility of Nepali Gorkhas joining the Chinese army is no longer out of the question. If this were to happen, it could pose a significant challenge to India's military strategy in the region.

Meanwhile, the United Kingdom is also seeking to bolster its Gorkha forces. The UK already maintains the Royal Gurkha Rifles, which recruits Nepali Gorkhas, and there are reports suggesting that Britain plans to expand its Gorkha recruitment further. The UK's interest in Gorkhas dates back to the colonial era when it formed its Gorkha regiments, and now, with the changing geopolitical landscape, it appears they are looking to renew and strengthen these ties.

The composition of the Indian Army's Gorkha regiments has undergone significant changes over the years. Before Indian independence, about 90 percent of the soldiers in the Gorkha Regiment were from Nepal, with only 10 percent being Indian Gorkhas. Over time, however, the proportion of Indian Gorkhas has increased, and today, the ratio stands at approximately 60 percent Nepali Gorkhas and 40 percent Indian Gorkhas.

The decline in the recruitment of Nepali Gorkhas, combined with the lack of available Indian Gorkhas from the regions of Uttarakhand, has left the Indian Army scrambling to maintain its Gorkha regiments. With seven Gorkha regiments spread across the Army, and more than 43 battalions, this loss is both symbolic and practical.

The situation brought increased attention to the upcoming visit of Army Chief General Upendra Dwivedi to Nepal. The visit has sparked hopes that it might pave the way for a renewal of recruitment agreements between the two nations. However, experts suggest that this is ultimately a

matter of diplomatic negotiations between the governments of India and Nepal. While the Army Chief's visit may influence discussions, it is unlikely to be a decisive factor in overturning Nepal's policy on Gorkha recruitment.

<https://www.news18.com/india/a-200-year-legacy-in-jeopardy-why-nepali-gorkhas-may-no-longer-serve-in-indian-army-9125875.html>

## THE TIMES OF INDIA

*Wed, 20 Nov 2024*

### **OPF's heavy drop parachute to help army in conflict**

The Army can now deploy jeeps and light field guns to secure locations using the P-7 heavy drop parachute developed locally. Ordnance Parachute Factory (OPF) engineered this sophisticated parachute, and GIL secured a substantial contract for 146 units during a ceremony in Delhi.

DPSU Gliders India Limited was commissioned to manufacture the P-7 heavy drop parachute system. This advanced system enables the safe deployment of loads weighing up to 9.5 tonnes from a height of four kilometres using IL-76 aircraft.

OPF general manager, MC Balasubramaniam, said that this system enables the Indian Army to swiftly deploy light field guns and jeeps in border and conflict zones via air-dropping.

<https://timesofindia.indiatimes.com/city/kanpur/revolutionary-p-7-heavy-drop-parachute-enhances-indian-armys-air-deployment-capabilities/articleshow/115460441.cms>

## ThePrint

*Tue, 19 Nov 2024*

### **Bharat Forge & defence ministry start contract negotiations for ATAGS. The journey so far**

Kalyani Group's Bharat Forge has entered into contract negotiations with the defence ministry which plans to procure 307 indigenous Advanced Towed Artillery Gun Systems (ATAGS) from the company.

"After completion of the due technical evaluation process and commercial bids opening, the contract negotiation procedure between Bharat Forge Ltd and the Indian Ministry of Defence is currently underway," the company informed the stock exchange Tuesday.

Defence sources said that while the 155mm/52 calibre ATAGS was developed by the Defence Research and Development Organisation (DRDO) in collaboration with Bharat Forge and the TATA group, Bharat Forge emerged as the lowest bidder after bids were opened at the end of October.

Sources said that according to the plan, 60 percent of the contract will go to Bharat Forge and 40 percent to the TATAs if they agree to supply at the price pitched by Forge. Sources also said the negotiations would hopefully be completed this fiscal.

Interestingly, Bharat Forge had already bagged a contract from Armenia for ATAGS in 2022. Following their successful induction and performance, Armenia is now in talks with the company for a larger order.

However, as ThePrint reported last year, it's not the indigenous Dhanush or the ATAGS, but the new 155 mm/52 calibre Towed Gun Systems (TGS) that's earmarked to be the mainstay gun of Indian artillery in the future.

The Army is looking at a much lighter and more agile TGS, with more automation than the ATAGS. A request for information (RFI) sent out in December 2022 had said the weight of the TGS should preferably be less than 15 tonnes. In comparison to this, the ATAGS weighs over 18 tonnes.

### **Army's towed gun saga**

The process for acquiring towed guns began in 2001 as part of the Army's Field Artillery Rationalisation Plan (FARP), which was drawn up in 1999.

Under FARP, the procurement of 1,580 pieces of 155 mm/52 calibre Towed Artillery Gun Systems was envisaged along with additional numbers of self-propelled (tracked/wheeled) guns, mounted gun systems and ultra-light Howitzers. Multiple requests for proposal (RFPs) were issued for the towed guns.

In the last attempt under the UPA government, Israel's Elbit along with France's Nexter participated. The deal was for the supply of 400 guns and indigenous production of the remaining 1,180 guns by Ordnance Factory Board (OFB), under a full transfer-of-technology (TOT) process.

In March 2019, following what was meant to be an "field trial cum evaluation process" spread over several years—which saw many ups and downs—Elbit Systems was declared the lowest bidder.

However, the DRDO went on record to oppose any import plans, contending that ATAGS was better than Elbit's ATHOS guns, touting it to be the gun of the future.

But the Army pitched for 400 of these guns (for 20 regiments) to be procured from Elbit to "overcome operational voids in the medium artillery in high altitude areas along the northern borders", citing tensions at the Line of Actual Control (LAC).

The deal did not go through due to strong opposition from the DRDO and local industry.

The TGS, however, will open up opportunities for both Elbit and Nexter to take part through partnerships with Indian firms for the gun to be manufactured in India.

As reported, Elbit had earlier written to India's Ministry of Defence stating that in case it preferred to acquire only the first 400 towed guns, the related cost corresponding to TOT could be deducted from the total contract price.

In the letter, Elbit Systems offered the TOT for future 1,180 guns as an option for India, at the same cost as mentioned in the commercial offer.

Elbit also said it has finalised the approach and strategy to achieve 70 percent indigenisation within the contract of the first 400 towed guns, starting from the first set of guns.

### **ATAGS was developed quickly but procedures dragged**

The ATAGS programme was greenlighted in 2012 by the Artillery Directorate of the Indian Army even though plans were already afoot to buy a foreign gun under buy-and-make category.

To meet FARP requirements, DRDO initiated feasibility study and other pre-project activities for design and development of the 155 mm/ 52 cal Towed Artillery Gun System in 2009.

In September 2012, a mission mode project titled 'Design and Development of 155 mm x 52 Cal (ATAGS)' was sanctioned to DRDO's Armament Research and Development Establishment.

While the gun was developed fairly quickly and was even showcased at the 68th Republic Day parade in 2017, it went through extensive trials and procedures. This, even though the Army kept pitching for the Israeli gun system.

In 2021, ThePrint reported on the extensive trials being done of the ATAGS and how the gun system had performed.

ATAGS is also the first indigenous gun to participate in the 21-gun salute alongside the British origin 25 pounder as part of 76th Independence Day celebrations at Red Fort in 2022.

The ATAGS' range with extended range sub-bore boat tail (ERFB BT) ammunition is 35 km and with ERFB BB (Base Bleed) ammunition is 45 km. The ATAGS has actually fired at a range of 47 KMS in 2017.

<https://theprint.in/defence/bharat-forge-defence-ministry-start-contract-negotiations-for-atags-the-journey-so-far/2363625/>



*Tue, 19 Nov 2024*

## **It's Been A Good Few Days For India's Missile Programme**

India has run a fairly successful missile development program for over three decades, but the past few days have been particularly remarkable.

On 12 November, the Defence Research and Development Organisation (DRDO) carried out the maiden flight test of the Long-Range Land Attack Cruise Missile (LRLACM). Just four days later, on 16 November, India conducted the first flight test of its long-range hypersonic missile. This marks the first time India has tested two major new missiles within the span of a single week.

While the LRLACM test may not, in itself, represent a major technological breakthrough, it marks a significant milestone in India's development of an indigenous subsonic cruise missile.

Derived from the Nirbhay subsonic cruise missile program, the LRLACM provides the Indian armed forces with a cost-effective option for large-scale attacks, offering a low-cost alternative for mass launches. It will complement the supersonic BrahMos, which, priced at \$5 million per unit, will be reserved for fewer high-value targets.

The LRLACM is designed to be launched from the ground by the Indian Army using a mobile articulated launcher and from frontline ships of the Indian Navy via a Universal Vertical Launch Module (UVLM) system. This system, developed by BrahMos Aerospace, the maker of the BrahMos cruise missile, is currently replacing older Russian UKSK cells on several Indian warships.

Powered by the indigenously developed Manik Small Turbo Fan Engine (STFE), the LRLACM is expected to achieve a range of over 1,000 km. The STFE is also produced by BrahMos Aerospace at its facility in Thiruvananthapuram.

The LRLACM is a mission-mode project with a set timeline for entry into service and has been approved by the Defence Acquisition Council.

The missile will be deployed across all three services, with the Indian Air Force (IAF) and the Army receiving their respective Acceptance of Necessity (AoN) sanctions in August 2023 and February 2024. Once ready, the IAF is expected to procure missiles worth around Rs 10,000 crore, while the Army plans to acquire missiles worth Rs 4,000 crore.

In contrast, the long-range hypersonic missile represents a major technological breakthrough.

Hypersonic weapons, technically speaking, have existed since the mid-20th century. A hypersonic weapon is one that travels at Mach 5 or faster—at least five times the speed of sound. Ballistic missiles have long been capable of reaching these speeds.

What distinguishes today's emerging hypersonic technologies is their use of aerodynamic lift. This allows reentry vehicles to manoeuvre within the atmosphere under guided flight. Unlike ballistic missiles, which follow a parabolic trajectory to their target, hypersonic missiles can reenter the atmosphere much more quickly.

After being launched from rocket boosters, these “boost-glide” vehicles reenter the atmosphere and are guided to their target. They can perform evasive manoeuvres to avoid interception by missile defence systems.

In addition to boost-glide vehicles, there are hypersonic cruise missiles, which operate on a different principle. Initially accelerated to hypersonic speeds using a rocket booster, these missiles switch to an air-breathing scramjet engine that keeps them powered throughout their flight.

Scramjet propulsion allows the missile to maintain hypersonic speeds without the need for traditional rocket propulsion, making it more efficient for long-range attacks.

The significance of hypersonic missiles, especially for countries with nuclear weapons, lies in their ability to defeat modern missile defense systems. Ballistic missile defense systems, such as those designed to intercept intercontinental ballistic missiles (ICBMs), are built to track and intercept missiles following predictable, high-altitude trajectories.

However, the maneuverability and speed of hypersonic missiles render these defense systems mostly ineffective, as they are unable to adjust quickly enough to counter the missile's evasive actions.

For instance, China's pursuit of hypersonic weapons, much like Russia's, is driven by concerns over U.S. hypersonic capabilities potentially enabling a preemptive strike on China's nuclear arsenal and infrastructure. This could be compounded by U.S. missile defense systems, which could limit China's ability to retaliate effectively.

Similarly, India's hypersonic missile program is largely motivated by concerns over China's growing capabilities.

China has successfully tested the DF-17, a medium-range ballistic missile designed to launch hypersonic glide vehicles, with a range estimated between 1,600 and 2,400 kilometers. It may now be ready for deployment.

Additionally, China has tested the DF-41 intercontinental ballistic missile (ICBM), which could potentially be adapted to carry either a conventional or nuclear hypersonic glide vehicle.

The DF-ZF hypersonic glide vehicle, formerly known as the WU-14, has been tested by China at least nine times since 2014. U.S. defense officials estimate the DF-ZF has a range of approximately 1,900 kilometers and may be capable of executing "extreme maneuvers" during flight. China is said to have fielded the DF-ZF in 2020.

<https://swarajyamag.com/defence/its-been-a-good-few-days-for-indias-missile-programme>



*Wed, 20 Nov 2024*

## **Indian, Chinese defence ministers to meet today**

Indian Defence Minister Rajnath Singh and Chinese Defence Minister Dong Jun will meet later today in Laos on the sidelines of the ASEAN Defence Minister's Plus meeting (ADMM +). This will be the second India-China ministerial meeting in the last two days and comes as ties turn around after the Kazan meeting between PM Modi and Chinese President Xi Jinping.

At the ADMM Plus meeting, the Indian Defence Minister is also expected to meet his counterparts from other countries, including Malaysia and Laos. ADMM Plus is an annual meeting that includes ASEAN defence ministers and the defence ministers of eight countries: Australia, China, India, Japan, New Zealand, South Korea, Russia, and the United States.

The last meeting between Indian Defence Minister Rajnath Singh and his Chinese counterpart was in April 2023 in India. At that time, the then-Chinese Defence Minister Li Shangfu had travelled to Delhi for the Shanghai Cooperation Organisation or SCO Defence Minister meeting. The meeting was significant, especially in the visual domain, since no handshake happened between the two ministers. While the border issue dominated the meeting, the fact that Minister Rajnath chose to do a namaste, instead of a handshake with his Chinese counterpart, showed that the ties remained frosty that time.

Before the 2023 meeting, Minister Rajnath Singh and the then Chinese Defence Minister General Wei Fenghe met on the sidelines of the SCO meet in Russia's Moscow in 2020, just months after the Galwan incident. The deadly clashes in Galwan, Eastern Ladakh in June of that year left 20 Indian and 4 Chinese soldiers dead.

Back-to-back ministerial meetings are seen as a positive element in ties, just a month after the Kazan meeting in October at the leaders' level. The October meeting on the sidelines of the BRICS summit was the first bilateral meeting between Indian and Chinese leaders since the Galwan incident, which led to the downfall of the ties between the two Asian giants. Following the clashes, India had banned a number of Chinese apps and increased scrutiny on Chinese investments.

Indian External affairs minister Dr S Jaishankar, and Chinese foreign minister Wang Yi met on Monday in Brazil on the sidelines of the G20 summit. During the meeting, it was decided that both countries will take the next steps in ties, which include the resumption of the Kailash Mansarovar Yatra pilgrimage, data sharing on trans-border rivers, direct flights between India and China and media exchanges.

<https://www.wionews.com/world/indian-chinese-defence-ministers-to-meet-today-777525>

## **PM Modi, Macron commit to bolster India-France strategic ties, focus on defence and AI**

Prime Minister Narendra Modi and French President Emmanuel Macron reviewed bilateral cooperation, including in strategic areas such as defence, space and civil nuclear energy, and committed to accelerating it further with a view to reinforcing their "shared commitment to strategic autonomy" in a meeting at Rio. This was their third bilateral meeting this year.

"During the meeting, the two leaders reaffirmed their commitment to advance the India-France Strategic Partnership as well as their shared vision for bilateral cooperation and international partnership, outlined in the Horizon 2047 roadmap and other bilateral declarations," said Indian govt in a statement.

Both leaders also exchanged views on regional and international issues , including the Indo-Pacific where France is a resident power.

"The two leaders commended strengthening of trade, investment and technology ties, including in the areas of digital technology and AI, as well as India-France partnership on digital public infrastructure," said the government.

"In this context, Prime Minister Modi welcomed the initiative of President Macron to organize the forthcoming AI Action Summit in France," said the government.

<https://timesofindia.indiatimes.com/india/pm-modi-macron-commit-to-bolster-india-france-strategic-ties-focus-on-defence-and-ai/articleshow/115463044.cms>



## **Warrior-VIII: China, Pakistan set to boost military ties with joint war game**

China and Pakistan are set to conduct a joint military exercise from late November to mid-December.

According to the Chinese defense ministry, the Chinese People's Liberation Army (PLA) Western Theater Command will dispatch its troops to Pakistan for the Warrior-VIII joint anti-terrorism exercise. This is the eighth edition of the exercise.

The exercise, with the theme 'a joint anti-terrorism elimination and strike operation' is in accordance with an annual schedule and consensus reached by the militaries of China and Pakistan. The goal of the exercise is to consolidate and deepen practical exchanges and cooperation between the two militaries and strengthen their joint anti-terrorism capabilities.

During the war game, the militaries of the two countries will carry out joint mixed training across multiple levels and specialties.

Joint planning and live-force exercises based on actual combat procedures will be conducted during the event.

Geopolitical shifts in South Asia and a decline in India China relations have brought Chinese and Pakistani militaries increasingly closer, with the the two sides engaging in training exchanges and officer exchanges.

<https://www.theweek.in/news/defence/2024/11/19/warrior-viii-china-pakistan-set-to-boost-military-ties-with-joint-war-game.html>

# THE ECONOMIC TIMES

Wed, 20 Nov 2024

## Vladimir Putin issues warning to United States with new nuclear doctrine

Russian President Vladimir Putin on Tuesday lowered the threshold for a nuclear strike in response to a broader range of conventional attacks, and Moscow said Ukraine had struck deep inside Russia with U.S.-made ATACMS missiles. Putin approved the change days after two U.S. officials and a source familiar with the decision said on Sunday that U.S. President Joe Biden's administration allowed Ukraine to use U.S.-made weapons to strike deep into Russia.

Russia had been warning the West for months that if Washington allowed Ukraine to fire U.S., British and French missiles deep into Russia, Moscow would consider those NATO members to be directly involved in the war in Ukraine.

The updated Russian nuclear doctrine, establishing a framework for conditions under which Putin could order a strike from the world's biggest nuclear arsenal, was approved by him on Tuesday, according to a published decree.

Analysts said the biggest change was that Russia could consider a nuclear strike in response to a conventional attack on Russia or its ally Belarus that "created a critical threat to their sovereignty and (or) their territorial integrity".

"The big picture is that Russia is lowering the threshold for a nuclear strike in response to a possible conventional attack," said Alexander Graef, a senior researcher at the Institute for Peace Research and Security Policy at the University of Hamburg.

The previous doctrine, contained in a 2020 decree, said Russia may use nuclear weapons in case of a nuclear attack by an enemy or a conventional attack that threatened the existence of the state. The U.S. National Security Council said it had not seen any reason to adjust the U.S. nuclear posture. Together, Russia and the U.S. control 88% of the world's nuclear warheads.

Putin is the primary decision-maker on the use of Russia's nuclear arsenal.

### Lower Threshold

The doctrine said any attack by a non-nuclear power supported by a nuclear power would be considered a joint attack, and that any attack by one member of a military bloc would be considered an attack by the entire alliance, it said. Russia's defence ministry said Ukraine had struck Russia's Bryansk region with six missiles, and that air defence systems intercepted five and damaged one.

"We will be taking this as a qualitatively new phase of the Western war against Russia and we will react accordingly,"

Putin's foreign minister, Sergei Lavrov, said in English, adding that U.S. personnel and data must have been used in the ATACMS attack on Russia. Lavrov said Russia would do everything to avoid nuclear war, and pointed out that it was the U.S. which used nuclear weapons against the Japanese cities of Hiroshima and Nagasaki in 1945.

On the 1,000th day of the Ukraine war, Russia also included a broader definition of the data that could be used to indicate Russia was under mass attack from aircraft, cruise missiles and unpiloted aircraft.

The war is entering what some Russian and Western officials say could be its final and most dangerous phase as Moscow's forces advance at their fastest pace since the early weeks of the conflict and the West ponders how the war will end. Government bonds and the Japanese yen rallied, while stocks and the euro fell, as investors bought safe-haven assets after the publication of Russia's doctrine. The Russian rouble fell past 100 per U.S. dollar for the first time since October 2023.

## **War**

Russian diplomats say the crisis is comparable to the 1962 Cuban Missile Crisis when the two Cold War superpowers came closest to intentional nuclear war, and that the West is making a mistake if it thinks Russia will back down over Ukraine. The Kremlin said Russia considered nuclear weapons a means of deterrence and that the updated text was intended to make clear to potential enemies the inevitability of retaliation should they attack Russia.

"Now the danger of a direct armed clash between nuclear powers cannot be underestimated, what is happening has no analogues in the past, we are moving through unexplored military and political territory," said Sergei Ryabkov, Russia's deputy foreign minister overseeing arms control and U.S. relations.

The main changes to the nuclear doctrine were flagged by Putin in September. Asked whether publication of the decree was linked to Washington's decision on allowing Ukraine to fire U.S. missiles deep into Russia, Kremlin spokesman Dmitry Peskov said the doctrine had been published in a "timely manner".

"Nuclear deterrence is aimed at ensuring that a potential adversary understands the inevitability of retaliation in the event of aggression against the Russian Federation and/or its allies," Peskov said.

<https://economictimes.indiatimes.com/news/defence/vladimir-putin-issues-warning-to-united-states-with-new-nuclear-doctrine/articleshow/115451332.cms>

# THE ECONOMIC TIMES

*Wed, 20 Nov 2024*

## **Southeast Asian defense chiefs meet in Laos as maritime disputes with China are flaring**

Southeast Asian defense chiefs and representatives are meeting in the Laotian capital on Wednesday for security talks at a time of increasing maritime disputes with China in the Asia-

Pacific and as the transition to a new U.S. president looms. U.S. Secretary of Defense Lloyd Austin was set to join the meetings of the Association of Southeast Asian Nations defense ministers in Vientiane, where many will be looking for assurances ahead of President-elect Donald Trump's return to power in January.

Austin just wrapped up meetings in Australia with officials there and Japan's defense minister, where they pledged their ongoing support for ASEAN and their "serious concern about destabilizing actions in the East and South China Seas, including dangerous conduct by the People's Republic of China against Philippines and other coastal state vessels."

In addition to the United States, other nations attending the two-day ASEAN meetings include Japan, South Korea, India, Australia and China. Along with the Philippines, ASEAN member states Vietnam, Malaysia and Brunei all have competing claims with China in the South China Sea, which Beijing claims almost in entirety as its own territory.

Indonesia, Thailand, Singapore, Myanmar, Cambodia, and Laos make up the rest of the member states. As China has been more assertively pushing its claims in recent years, ASEAN members and Beijing have been negotiating a code of conduct to govern behavior in the sea for years, but progress has been slow.

Officials have agreed to try and complete the code by 2026, but talks have been hampered by sticky issues, including disagreements over whether the pact should be binding. Philippine President Ferdinand Marcos Jr., who has called for more urgency in the code of conduct negotiations, complained at the meeting of ASEAN leaders last month that his country "continues to be subject to harassment and intimidation" by China's actions, which he said violated international law.

Chinese and Philippine vessels have clashed repeatedly this year, and Vietnam in October charged that Chinese forces assaulted its fishermen in disputed areas in the South China Sea. China has also sent patrol vessels to areas that Indonesia and Malaysia claim as exclusive economic zones.

At the meeting of ASEAN leaders last month, U.S. Secretary of State Antony Blinken said Washington was "very concerned about China's increasingly dangerous and unlawful activities in the South China Sea which have injured people, harm vessels from ASEAN nations and contradict commitments to peaceful resolutions of disputes."

He pledged that the U.S. would "continue to support freedom of navigation, and freedom of overflight in the Indo Pacific."

In response, Chinese Foreign Ministry spokesperson Mao Ning said U.S. and other military presences from outside the region were the main source of instability in the sea.

"The increasing military deployment and activities in the South China Sea by the U.S. and a few other non-regional countries, stoking confrontation and creating tensions, are the greatest source of instability for peace and stability in the South China Sea," Mao said.

It is not yet clear how the incoming Trump administration will address the South China Sea situation. After Austin's meetings in Australia, the Defense Department said the U.S., Australia and Japan had agreed to expand joint drills in the region, and announced a defense consultation body among the three countries' forces to strengthen their cooperation. When asked Tuesday while in the Philippines about whether the strong U.S. defense support would continue for the country under Trump, Austin said he would not speculate.

It remained unclear whether Austin plans to meet China's Defense Minister Dong Jun on the sidelines of the ASEAN meetings, but Japanese Defense Minister Gen Nakatani is expected to meet with Dong to express his concerns over Beijing's military activities, Japan's NHK reported.

Japan has protested that a Chinese military aircraft violated its airspace briefly in August, and in September Japan expressed "serious concerns" after a Chinese aircraft carrier and two destroyers sailed between two Japanese islands.

The meetings are also likely to touch on the ongoing tensions in the Korean Peninsula, the Russia-Ukraine war, and the escalating conflict in the Middle East. They also expect to hold talks on a range of issues, including natural disasters, cybersecurity and terrorism. Another thorny security issue in the region also includes the civil war and growing humanitarian crisis in ASEAN member Myanmar.

The group's credibility has been severely tested by the war in Myanmar, where the army ousted an elected government in 2021, and fighting has continued with prodemocracy guerillas and ethnic rebels. More than a year into an offensive initiated by three militias and joined by other resistance groups, observers estimate that less than half the country's territory remains under the army's control.

Myanmar military rulers have been barred from ASEAN meetings since late 2021, but this year, the country has been represented by high-level bureaucrats, including at the summit in October.

<https://economictimes.indiatimes.com/news/defence/southeast-asian-defense-chiefs-meet-in-laos-as-maritime-disputes-with-china-are-flaring/articleshow/115467935.cms>

## THE ECONOMIC TIMES

*Tue, 19 Nov 2024*

### **Iran defies international pressure, increasing its stockpile of near weapons-grade uranium, UN says**

Iran has defied international demands to rein in its nuclear program and has increased its stockpile of uranium enriched to near weapons-grade levels, according to a confidential report by the United Nations' nuclear watchdog seen Tuesday by The Associated Press.

The report by the International Atomic Energy Agency said that as of Oct. 26, Iran has 182.3 kilograms (401.9 pounds) of uranium enriched up to 60%, an increase of 17.6 kilograms (38.8 pounds) since the last report in August. Uranium enriched at 60% purity is just a short, technical step away from weapons-grade levels of 90%.

The IAEA also estimated in its quarterly report that as of Oct. 26, Iran's overall stockpile of enriched uranium stands at 6,604.4 kilograms (14,560 pounds), an increase of 852.6 kilograms (1,879.6 pounds) since August. Under the IAEA's definition, around 42 kilograms (92.5 pounds) of uranium enriched to 60% purity is the amount at which creating one atomic weapon is theoretically possible — if the material is enriched further, to 90%.

The reports come at a critical time as Israel and Iran have traded missile attacks in recent months after more than a year of war in Gaza, which is governed by Hamas, a group supported by Iran.

Adding to the complexity, Donald Trump's reelection raises questions about whether and how the incoming administration and Iran may engage. Trump's first term in office was marked by a particularly troubled period, when he pursued a policy of "maximum pressure" against Tehran. He unilaterally withdrew America from Iran's nuclear deal with world powers, leading to the sanctions hobbling the economy, and ordered the killing of the country's top general.

Iran last week offered not to expand its stockpile of uranium enriched up to 60%, during a visit to Tehran by the IAEA chief, Rafael Mariano Grossi. The IAEA said during the meetings, "the possibility of Iran not further expanding its stockpile of uranium enriched up to 60% U-235 was discussed, including technical verification measures necessary for the Agency to confirm this, if implemented."

The report said that one day after Grossi left Iran, on Nov. 16, IAEA inspectors verified that "Iran had begun implementation of preparatory measures aimed at stopping the increase of its stockpile of uranium enriched up to 60 % U-235" at its underground nuclear sites in Fordow and Natanz.

The reports come ahead of this week's regular IAEA Board of Governors meeting in Vienna. Western countries have been considering a resolution censuring Iran for its failure to improve cooperation with the agency. A senior diplomat, who spoke on the condition of anonymity because of the sensitivity of the issue, said it is possible that the commitments made by Iran during the IAEA's chief visit may not stand in case a resolution is passed.

In the past, Iran has responded to resolutions by the IAEA Board of Governors by further enhancing its nuclear program. Iran has maintained its nuclear program is for peaceful purposes only, but Grossi, has previously warned that Tehran has enough uranium enriched to near-weapons-grade levels to make "several" nuclear bombs if it chose to do so.

He has acknowledged the U.N. agency cannot guarantee that none of Iran's centrifuges may have been peeled away for clandestine enrichment.

The IAEA also reported that Iran has failed to take concrete steps as of now to improve cooperation, despite pleas by Grossi, who held talks last week with Mohammad Eslami of the Atomic Energy Organization of Iran, Iranian Foreign Minister Abbas Araghchi and Iran's reformist President Masoud Pezeshkian.

However, Tuesday's confidential report also said that during Grossi's visit to Iran on Nov. 14, "Iran agreed to respond to the Agency's concerns related to Iran's withdrawal of the designation of several experienced Agency inspectors by considering the acceptance of the designation of four additional experienced inspectors."

In September 2023, Iran barred some of the Vienna-based agency's most experienced inspectors. The report also said there was no progress thus far in reinstalling more monitoring equipment, including cameras, removed in June 2022. Since then, the only recorded data comes from IAEA cameras installed at a centrifuge workshop in Isfahan in May 2023 — although Iran has not provided the IAEA with access to this data and inspectors have not been able to service the cameras.

Last week, Eslami warned that Iran could retaliate if challenged at the upcoming IAEA board meeting. Grossi acknowledged some nations were considering taking action against Iran. In an effort to ensure Iran could not develop atomic weapons, world powers struck a deal with Tehran in 2015 under which it agreed to limit enrichment of uranium to levels necessary for nuclear power in exchange for the lifting of economic sanctions.

U.N. inspectors were tasked with monitoring the program Under the original 2015 nuclear deal, Iran was allowed to enrich uranium only up to 3.67% purity, can maintain a stockpile of uranium

of 300 kilograms and is permitted to use only very basic IR-1 centrifuges, machines that spin uranium gas at high speed for enrichment purposes.

A year after the U.S. withdrawal from the deal under Donald Trump, Iran started to gradually abandon all limits the deal put on its program and began enriching uranium to up to 60% purity.

<https://economictimes.indiatimes.com/news/defence/iran-has-increased-its-stockpile-of-uranium-enriched-to-near-weapons-grade-levels-un-says/articleshow/115459212.cms>

# THE ECONOMIC TIMES

*Tue, 19 Nov 2024*

## **Why are Nordic nations preparing for war? Sweden, Finland, Norway, and Denmark say you should be...**

As tensions escalate in Europe following the Russia-Ukraine conflict, Nordic countries like Sweden, Finland, Norway, and Denmark are ramping up war preparedness campaigns, urging citizens to stockpile essentials and mentally brace for crises. Meanwhile, the conflict took a new turn as Ukraine confirmed its first strike on Russian territory using US-supplied ATACMS long-range missiles, targeting Russia's Bryansk region. Marking 1,000 days since the invasion began, Russia criticised Washington's decision to supply such missiles, which have a range of up to 300 km, signalling a "new phase" in the conflict.

### **Why is Sweden urging citizens to prepare for war?**

Sweden, which dropped its policy of military non-alignment to join NATO following Russia's invasion of Ukraine, is sending out a pamphlet titled "If Crisis or War Comes" to all its households. As per an AFP report, the Swedish Civil Contingencies Agency (MSB) distributed millions of copies to educate the public on how to handle emergencies, including war, natural disasters, and cyber attacks. This pamphlet, which has been updated for 2024, stresses the importance of resilience and preparedness for potential military conflict.

### **What's in the Swedish pamphlet?**

The 32-page booklet offers practical tips for emergencies, advising Swedes to stockpile non-perishable food, water, and medicines. It also highlights the increasing threats of military conflict, terrorism, and cyber attacks. This version has a stronger emphasis on war preparedness compared to previous editions, marking the first major update since 2018, when Sweden distributed the pamphlet after a long hiatus dating back to the Cold War.

### **Why is Finland focusing on crisis preparedness?**

Similarly, Finland, which shares a lengthy border with Russia, has launched a preparedness website to gather information on how citizens can prepare for various crises, including military conflict. Unlike Sweden, Finland has opted for a digital platform rather than printing physical copies for every household. The Finnish digital brochure, available in multiple languages, explains how Finland's government would respond in the event of an armed attack, emphasising the nation's self-defence capabilities.

### **How are Norway and Denmark preparing their citizens?**

As per a BBC report, Norway is also actively engaging in crisis preparedness, sending over millions of paper copies of a similar pamphlet to households. The Norwegian brochure includes advice on handling extreme weather events, war, and other threats, with a focus on practical supplies such as long-life food, medicines, and iodine tablets in case of a nuclear accident. Denmark, on the other hand, has emailed its citizens with detailed advice on the necessary supplies to weather crises for up to three days.

### **What other actions are Nordic nations taking?**

In addition to pamphlets, the Nordic countries are using digital platforms to stay updated and provide their citizens with the latest information on preparedness. Norway has expanded its preparedness campaigns to reflect the increased risks posed by climate change, while Denmark's emergency management agency is ensuring that citizens are equipped to handle emergencies involving food and medicine shortages.

### **Why is this happening now?**

These efforts are a direct response to the ongoing war in Ukraine, which has increased concerns about the possibility of military conflicts spilling over into other parts of Europe. With Russia's aggression reshaping the security landscape, Nordic nations are strengthening their civil defence strategies to ensure their populations are ready for any emergency, from natural disasters to full-scale war.

### **What's the impact on the Nordic public?**

The public's reaction has been mixed. Some Swedes, like former army chief Micael Byden, have called for a mental preparation for war, urging citizens to face the reality of the situation. Meanwhile, Finland and Norway are also working to ensure that their citizens stay informed and prepared for various scenarios, highlighting the seriousness of the geopolitical situation.

<https://economictimes.indiatimes.com/news/defence/why-are-nordic-nations-preparing-for-war-sweden-finland-norway-and-denmark-say-you-should-be-/articleshow/115458058.cms>



*Tue, 19 Nov 2024*

## **Historic Realignment! 1st Direct Cargo Ship From Pakistan Docks In Bangladesh; Should India Be Worried?**

A major strategic realignment is underway in South Asia. In a historical first since Bangladesh's founding in 1971, a direct cargo ship from Pakistan docked at Bangladesh's Chittagong port, signaling an unprecedented thaw in relations between the two countries, which had been part of the same nation for nearly a quarter century.

The cargo vessel from Karachi arrived at Bangladesh's southeastern port city of Chittagong on November 11, marking the first-ever direct maritime contact between the two countries in over five decades.

Establishing a direct maritime link between India's eastern and western neighbors signals a major realignment in the region and has New Delhi alarmed.

For New Delhi, this is just one in a series of signals by the three-month-old Muhammad Yunus-led caretaker government in Bangladesh that Dhaka is slowly but certainly drifting towards Islamabad.

The Panama-flagged Yuan Xiang Fa Zhan, an 182-meter-long container ship, offloaded its cargo in Bangladesh before leaving port, news agency AFP reported, quoting top Chittagong port official Omar Faruq.

Port authorities said the ship brought goods from Pakistan and the United Arab Emirates, including raw materials for Bangladesh's key garment industry and basic foodstuffs.

Pakistan's envoy to Dhaka, Syed Ahmed Maroof, gave the details on social media platform X (formerly Twitter), "Direct cargo vessel from Karachi has reached Chittagong, marking the first direct maritime link between Pakistan & Bangladesh. The direct route promises to significantly streamline supply chains and reduce transit time besides enhancing bilateral trade and business ties."

Incidentally, the establishment of a direct maritime link between the two estranged countries comes after Bangladesh, in September, eased import restrictions on Pakistani goods, which previously required a mandatory 100 % physical inspection of goods on arrival, which resulted in long delays.

Also, the lack of a direct maritime link meant that, previously, Pakistani goods had to be off-loaded onto feeder vessels, usually in Sri Lanka, Malaysia, or Singapore, before traveling onwards to Bangladesh.

People on social media expressed hope that this is just the beginning and that a direct flight between Islamabad and Dhaka and the signing of a free trade agreement between the countries should follow.

There is also a buzz that popular Pakistani singer Rahat Fateh Ali Khan can perform in the Bangladesh Premier League's (BPL) 10th Edition opening ceremony.

All these developments have India alarmed for obvious reasons. Since the Muhammad Yunus-led caretaker government came to power in Bangladesh in August this year, multiple signals suggest Dhaka's historic realignment away from India in favor of Pakistan.

### **Bangladesh's Historic Realignment**

One of the first signs that the new government in Bangladesh is warming up to Pakistan and drifting away from India came less than 30 days after Muhammad Yunus took over as its leader following the overthrow of Sheikh Hasina's government after month-long violent protests.

In August, Bangladesh and parts of northeast India, including Tripura, Assam, and Meghalaya, experienced heavy rainfall that led to unprecedented floods. Within hours, Bangladeshi cyberspace was inundated with posts that alleged India deliberately released more water from the Dumbur Dam, upstream of the Gumti River in India's Tripura State, to cause flooding in Bangladesh.

The narrative peddled was that New Delhi was doing this to punish Dhaka for the August 5 uprising that led to the overthrow of the Sheikh Hasina government, widely perceived to be close to India.

While such social media chatter does not usually warrant a response from the government, such was the appeal of this fake narrative that the Indian Ministry of External Affairs had to issue a clarification that the flood was not caused by India.

Then on September 11, the National Press Club, Dhaka, organized an event commemorating the 76th death anniversary of Pakistan founder Muhammad Ali Jinnah. Kamran Dhangal, the Deputy High Commissioner of Pakistan to Bangladesh, attended the event.

The ceremony featured banners displaying Jinnah's motto, "Unity, Faith, and Discipline." Speakers at the event asserted that without Jinnah, Pakistan—and consequently Bangladesh—would not have existed. Bangladesh, formerly East Pakistan, was formed out of Pakistan after the Liberation War in 1971.

Such an event, crediting Jinnah with the founding of Bangladesh, would have been unthinkable during Sheikh Hasina's 15-year rule.

Mohammad Samsuddin, a speaker at the event, said had it not been for the formation of Pakistan, Bangladesh may have faced a situation similar to Kashmir. "Bangladesh achieved independence because of Pakistan, which Jinnah helped to establish," declared Samsuddin.

He also suggested that Bangabandhu Avenue should be renamed Jinnah Avenue. Sheikh Mujibur Rahman, father of Sheikh Hasina and leader of Bangladesh's Liberation War, is popularly known as Bangabandhu. Jinnah Avenue was changed to Bangabandhu Avenue in 1972 after the bloody Liberation War.

These sentiments showed that a clear attempt was made that Bangladesh should look for its identity and roots within the Pakistan movement of 1947 that broke India and not in the Liberation War of 1971 that dismembered Pakistan.

The event closed with the singing of Urdu songs. The use of Urdu was also loaded with symbolism, given that language was one of the main issues that led to the formation of Bangladesh.

When Pakistan was established in 1947, Urdu was declared its national language, even though Bengali was spoken by the majority in East Pakistan. Also, since East Pakistan was more populous than West Pakistan, Bengali had an equal, if not stronger, claim to be declared a national language.

This language discrimination led to the first mass movement in East Pakistan, which many believe ultimately led to a separatist movement that culminated in the 1971 Liberation War.

The new caretaker Bangladesh government is also expanding military ties with Islamabad. In September, Bangladesh ordered 40,000 rounds of ammunition, 2,000 units of tank ammunition, 40 tons of RDX explosives, and 2,900 high-intensity projectiles from Pakistan's Ordnance Factories (POF).

In September, Interim Prime Minister Muhammad Yunus met his Pakistani counterpart, Shehbaz Sharif, at the United Nations General Assembly in New York, where he emphasized the need to revitalize bilateral cooperation and turn a "new page."

In October, the interim government canceled eight national holidays related to Bangladesh's independence and Mujibur Rahman.

This was followed by a meeting between Pakistan's High Commissioner, Syed Ahmed Maroof, and Nahid Islam, a key students' protest coordinator against Hasina and an adviser to the current interim government, where he expressed the desire to "resolve the 1971 issue" with Pakistan. This contrasts sharply with the previous Hasina government's policy to seek an official apology from Islamabad for the atrocities committed by the Pakistani Army during the 1971 Liberation War.

Last month, Dhaka University Professor Shahiduzzaman even called for a nuclear treaty between Bangladesh and Pakistan, citing concerns over India's influence in the region and suggested that Pakistan's Ghauri missiles should be deployed in Bangladesh.

Earlier this month, Pakistan's High Commissioner to Bangladesh, Syed Ahmed Maroof, announced that Bangladeshis would now be eligible for free visas under business and visit categories.

On November 18, the Yunus-led government finished 100 days in power. Speaking on the occasion, Yunus highlighted the interim government's plan to extradite former Prime Minister Sheikh Hasina, from India. He also dismissed reports about attacks on Hindu minorities as "exaggerated propaganda," attributing the "sporadic incidents" as political and not communal in nature.

### **India's Concerns**

These developments clearly establish that a major realignment is underway in the South Asian region. India is rightly alarmed. India shares a porous border of 4,096 kilometers (2,545 miles) with Bangladesh.

India needs Dhaka's cooperation to secure its northeastern states. Many of the terror groups active in India's northeastern states have found refuge in Bangladesh.

While establishing a direct maritime link between Dhaka and Islamabad can be termed a desire to expand trade, New Delhi should remain alert as Pakistan has a history of using Bangladesh to foment trouble in India's northeast.

In 2004, a shipment of arms from Pakistan meant for a terror group in India's northeast was intercepted at Chittagong port.

Another irritant between India and Bangladesh could be Sheikh Hasina. While Bangladesh is preparing to demand Hasina's extradition from India, former Indian diplomats believe it would be unthinkable for New Delhi to return Sheikh Hasina to Bangladesh.

"India would not, in any scenario, extradite Sheikh Hasina to Bangladesh, regardless of the pressure," Ajay Bisaria, India's former high commissioner to Pakistan, was quoted as saying by DW.

South Asia expert Sreeradha Datta also said that it was "unlikely that India will let Hasina down" by deportation.

"Both governments must show pragmatism and maturity while dealing with the situation. It cannot be the case that allowing Hasina to stay should impinge on future relations," Datta, a professor of international affairs at the Jindal Global University, said.

### **Bangladesh Needs India More Than New Delhi Needs Dhaka**

For now, India is adopting a wait-and-watch policy regarding Bangladesh. While expressing its desire to work with the new dispensation in Dhaka, New Delhi is allowing the anti-India sentiments to mellow and letting them realize that Dhaka needs New Delhi as much as India needs Bangladesh.

India is the only country Bangladesh shares a land border with, and the two countries have common security interests.

Also, Pakistan is itself in an economic mess and can hardly offer Dhaka anything. In the Financial Year 2023, Bangladesh's bilateral trade with India was US\$15.9 billion compared to a meager US\$699 million with Pakistan. Bangladesh is India's largest trade partner in South Asia, while India is Bangladesh's second-biggest trade partner in Asia.

India exports diverse products to Bangladesh, including cotton yarn, petroleum products, oils, spices, and auto components. On the other hand, India imports essential commodities from Bangladesh, such as cotton ready-made garments, aircraft and spacecraft parts, jute, leather footwear, and marine products.

Bangladesh also depends on New Delhi for electricity, supplied through cross-border transmission lines. According to the Ministry of External Affairs, Bangladesh imports 1160 MW of power from India.

Over the past few years, India has also extended several lines of credit (LoC) to Bangladesh worth US\$8 billion and additional grant assistance for several infrastructure projects.

“Bangladesh is surviving on external debt. Unchecked external borrowing has put Bangladesh at great risk of economic crisis that may fuel the ongoing social anarchy in the country. Bangladesh’s economic challenges include a culture of loan defaults, poor corporate governance, and price hikes for fuel and electricity,” DrPrabir De, Professor with New Delhi-based think tank RIS, was quoted as saying by The Economic Times.

With these critical dependencies, it won’t be long before Dhaka realizes it can not go too far by alienating India, but in the meantime, India should not let its guard down.

<https://www.eurasiantimes.com/historic-realignment-1st-direct-cargo-ship/>



*Wed, 20 Nov 2024*

## **China’s Anti-Ship Missiles ‘Sink’ British \$7.8B Aircraft Carriers In Wargames; Are Flattops Getting Obsolete?**

The debate on the efficacy and potency of aircraft carriers and submarines has been raging for a while. While both flattops and submerged platforms have pros and cons, the recent wargaming showed that Britain lost its multi-billion-pound aircraft carriers ‘in most wargames.’

The UK’s Royal Navy inducted two aircraft carriers, HMS Queen Elizabeth and HMS Prince of Wales, in 2017 and 2019. Built at a cost of £6.2 billion (US\$7.8 billion), the aircraft carriers aim to project the country’s power far beyond its borders.

The use of anti-ship missiles and the new anti-aircraft systems have led many to wonder about the carrier’s possible obsolescence. Wargames have shown that the constant technological evolution has made aircraft carriers vulnerable to modern missiles.

An official familiar with the wargames has been quoted in the media that “the carriers get sunk” in most of the iterations.

China’s long-range ballistic missiles, which have earned the sobriquet “aircraft carrier killers,” have challenged the naval power projection of Western countries, and the UK is no exception.

Royal Navy strategists are seized with the huge progress in the Chinese anti-ship missile arsenal. The missile technology has made it capable of locating and tracking Britain’s naval fleet.

China has also been reviving Cold War-era technology by building large Over the Horizon Radar (OTHR) sites, which can be used to locate the sites of its adversary’s fleet from a great distance.

Two types of OTHR can be deployed: a skywave and a surface wave. Both systems were used during the Cold War era but lost their importance to modern-day radars.

The OTHR is set to make a comeback as it can address the range limitations of current radars. OTHRs' range can extend into thousands of miles as they consist of an extensive array of antennae spread out over an area, with the transmission and receiving equipment placed geographically away from each other.

China's latest missile in the arsenal is the DF-17, which is equipped with a hypersonic glide vehicle. The missile is fast and long-range, with a high-precision strike capability, leaving enemies with little time to react. The hypersonic glide vehicles have higher maneuverability and lower altitudes, making them harder to track and predict their flight path.

During the wargames, the Royal Navy's 'ability to survive' is 'stretched to the limit,' with a scenario eventually arising whereby a carrier would be sunk.

### **Do Aircraft Carriers Have A Place In Future Warfare?**

In July 2024, the UK's new labor government undertook a comprehensive assessment of defense projects to save money. One of the questions they explored was whether aircraft carriers are necessary for modern warfare.

The Telegraph reported that in a recent meeting between the Ministry of Defence and Treasury officials, the possible decommissioning of at least one of the Navy's carriers was explored as departments look to remedy ongoing financial problems.

The Royal Navy officials, however, insisted that mothballing the aircraft carrier would not lead to considerable savings. Retiring one aircraft carrier would mean that the Royal Navy could be without one when the lone flattop goes for repair and maintenance. The UK must also have at least one aircraft carrier available for NATO duty.

The situation is further aggravated by the Royal Navy's financial crunch, which makes it difficult for it to afford new F-35 aircraft to operate from its carriers.

The aircraft carrier needed to be escorted by support vessels, and the ongoing manpower crisis meant that the HMS Prince of Wales was flanked by warships from the Norwegian Navy during its deployment to the Pacific Region.

During the Falkland Wars, the Royal Navy had four aircraft carriers, but this number has been reduced to two. The number of destroyers has also come down from 13 to six. The Navy now has only six frigates from a whopping 51 frigates in 1982. The number of submarines has also decreased from 37 to 10.

The remaining warships are old, overworked, and fast approaching retirement. In the coming years, its aircraft carrier will need escorts from friendly navies.

The Royal Navy's strength is woefully short in dealing with emerging threats, especially in the Indo-Pacific. With the Chinese Navy's sojourn increasing close to home, the Royal Navy needs an aggressive plan to get new naval platforms. Over the past month, a Royal Navy frigate monitored a Chinese naval task force twice as it passed through the English Channel and back again.

In comparison, the US has one of the largest numbers of aircraft carriers in the world, at 11. The PLA Navy's third aircraft carrier, the 80,000-ton Fujian, is undergoing sea trials, and the Indian Navy is also contemplating a third aircraft carrier.

There has also been a school of thought that has been pushing for bigger nuclear-powered aircraft carriers. Nuclear propulsion offers higher and unlimited power to the carriers. The nuclear-powered floating bases are more agile and can be deployed for extended periods.

Small flattops have less potent onboard defense systems than big carriers and are particularly vulnerable to drone swarm attacks. A small aircraft carrier's peacetime importance is under contention, and its combat role is limited.

<https://www.eurasiantimes.com/chinas-anti-ship-missiles-sink-british-7-8b/>

## Science & Technology News



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*Tue, 19 Nov 2024*

### **Self-shocks turn crystal to glass at ultralow power density**

Researchers have shown that utilizing shallow power, a crystalline material called indium selenide can “shock” itself to a glassy phase. This transformation lies at the heart of memory storage in devices like CDs and computer RAMs. It uses a billion times less electricity than the traditional melt-quench process for converting crystal to glass, and the discovery might revolutionise data storage in gadgets ranging from cell phones to computers.

Glasses function similarly to solids but lack the regular periodic arrangement of atoms. To avoid the glass from getting too organized, a crystal is liquefied (melted) and then rapidly chilled (quenched) during the manufacturing process. This melt-quench technique is also employed in CDs, DVDs, and Blu-ray discs, where laser pulses are used to rapidly heat and quench a crystalline material to the glassy phase in order to write data; reversing the process erases data. Computers use similar materials known as phase-change RAMs, in which information is stored depending on the high versus low resistance provided by the glassy and crystalline phases.

The difficulty is that these devices consume more power, particularly during the writing process. The crystals must be heated to temperatures exceeding 800oC and then rapidly cooled. If it is possible to convert the crystal directly to glass without using the intermediate liquid phase, the amount of power required for memory storage can be greatly reduced.

A team of researchers from the Indian Institute of Science (IISc), Bangalore, University of Pennsylvania School of Engineering and Applied Science (Penn Engineering), Pennsylvania and Massachusetts Institute of Technology (MIT), Harvard, USA discovered that when electric current was passed through wires made of indium selenide, a 2D ferroelectric material, long stretches of the material transformed into glass. These breakthrough findings were published in the journal Nature. The research was supported by ANRF (erstwhile SERB) established through an Act of Parliament: ANRF, Act 2023.

The scientists unearthed that when a continuous current is passed parallel to the material's 2D layers, they slide against each other in various directions. This results in the formation of many domains – tiny pockets with a specific dipole moment enclosed by defective regions that separate the domains. When multiple defects intersect in a small nanoscopic region, like too many holes punched in a wall, the structural integrity of the crystal collapses to form glass locally.

These domain boundaries are like tectonic plates. They move with the electric field, and when they collide against each other, mechanical (and electrical) shocks are generated akin to an earthquake. This earthquake triggers an avalanche effect, causing disturbances far away from the epicentre, creating more domain boundaries and resulting glassy regions, which in turn spawns more earthquakes. The avalanche stops when the entire material turns into glass (long-range amorphisation).

Prof. Nukala points out that multiple unique properties of indium selenide – its 2D structure, ferroelectricity and piezoelectricity – all come together to allow this ultralow energy pathway for amorphisation through shocks. He further emphasized that the current findings will unlock a wider range of phase-change memory (PCM) applications.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2074622>



*Tue, 19 Nov 2024*

## **Can use genomic labs set up during pandemic to measure antimicrobial resistance: Soumya Swaminathan**

Tamil Nadu could use the genomic testing laboratories set up during the COVID-19 pandemic to measure the level of antimicrobial resistance by analysing effluents from pharmaceutical companies and hospitals, said Soumya Swaminathan, chairperson of the M.S. Swaminathan Research Foundation.

At the inauguration of the Antimicrobial Resistance (AMR) Awareness Week celebrations here on Monday, organised by Alagappa College of Technology and the Tamil Nadu Council for Science and Technology (TNCST), Dr. Soumya, former Chief Scientist and Deputy Director General of the World Health Organization (WHO), called for testing effluents from pharmaceutical companies, water let out by hospitals, and the soil to assess the levels of antibiotic use.

“During COVID-19, we did wastewater surveillance to check for coronavirus variants. We have the genomic capacity. By analysing water let out by pharmaceutical industries and hospitals, we can get an idea of the level of antimicrobial resistance,” she said.

Only in India did COVID-19 patients contract ‘black fungus’, which she pointed out was the direct result of indiscriminate use of steroids. Hospitals should conduct surveillance of infections on their premises, and the results should be made public, Dr. Soumya said, pointing out that 30,000 newborns in India die annually in intensive care units as they are resistant to drugs.

She added: “The government should give grants to encourage the development of rapid diagnostic tests to check for antimicrobial resistance. Such tests will help advice the correct dose of antibiotics.”

Dr. Soumya said Indian generic pharmaceutical companies, with their experience in developing COVID-19 vaccines, could step in, and the government could support the development of new antibiotics.

When Tamil Nadu's One Health Committee meets on December 4, it must take up the issue of developing an AMR policy, she added. S. Meenakshisundaram, dean of Alagappa College of Technology, said Anna University's Department of Biotechnology had worked on a simple diagnostic method to detect a urinary tract infection in six hours.

The device was currently in the validation stage, he added. S. Vincent, TNCST Member Secretary, also spoke.

<https://www.thehindu.com/news/national/tamil-nadu/can-use-genomic-labs-set-up-during-pandemic-to-measure-antimicrobial-resistance-sowmya-swaminathan/article68882188.ece>

# THE ECONOMIC TIMES

*Tue, 19 Nov 2024*

## **Why ISRO turned to SpaceX: Ex-chiefs explain GSAT-N2 launch decision**

India sought the assistance of SpaceX, a company founded by Elon Musk, to launch its newest communication satellite, GSAT-N2. This decision stems from the limitations of India's current launch vehicles, which cannot handle payloads exceeding 4,000 tonnes, as explained by former officials from the Indian Space Research Organisation (ISRO).

The satellite was successfully placed into orbit by SpaceX's Falcon 9 rocket from a US launch site. Weighing 4,700 kg, the GSAT-N2 is a high-throughput satellite designed to boost broadband services and in-flight connectivity throughout India, according to NewSpace India Limited (NSIL), ISRO's commercial arm.

Former ISRO chairperson K Sivan stated, "The satellite (launched by SpaceX) was a heavier one beyond the capability of ISRO launch vehicles, that's why it has gone outside."

He further explained that ISRO's current capacity is capped at four tonnes, falling short of the 4.7-tonne weight of GSAT-N2. However, Sivan assured that efforts are underway to increase the capabilities of ISRO launch vehicles.

This high-band communication satellite will extend connectivity to even the most remote areas of India. Another former ISRO chief, G Madhavan Nair, confirmed that India's lack of a launch vehicle capable of handling the 4.7-tonne satellite led to the decision to partner with SpaceX.

He added, "ISRO has plans to double its next generation vehicles capacity, but we can't wait until then, so they opted for SpaceX."

<https://economictimes.indiatimes.com/news/science/why-isro-turned-to-spacex-ex-chiefs-explain-gsat-n2-launch-decision/articleshow/115445534.cms>

