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# समाचार पत्रों से चयित अंश Newspapers Clippings

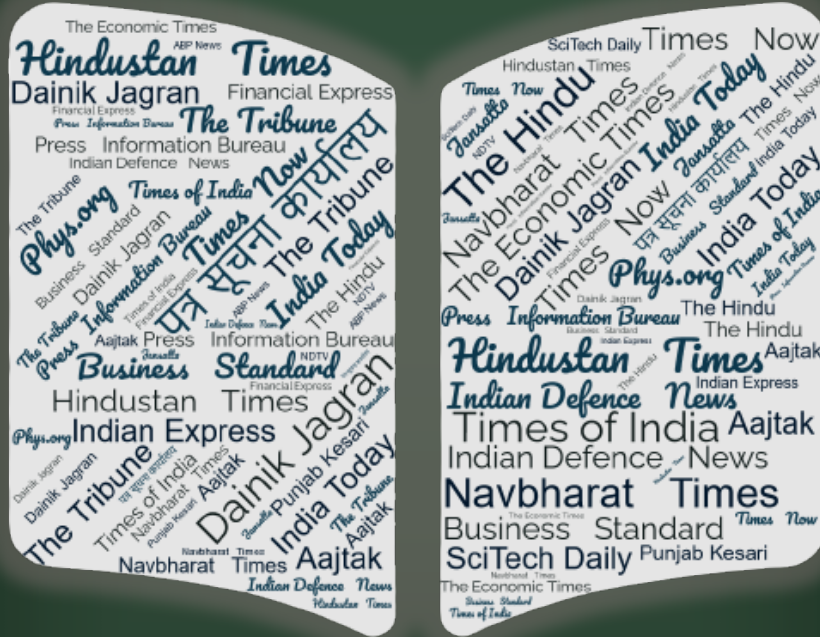
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### BSL-4 लैब चीन, रूसिया, अमेरिका के समकक्ष होगी:400 करोड़ की लागत से बन रही लैब, जैव केमिकल सुरक्षा में देश होगा आत्मनिर्भर



#### बीएसएल-4 लैब का शिलान्यास करते हुए

ग्वालियर में DRDE (रक्षा अनुसंधान एवं विकास स्थापना) की BSL-4 लैब बनने के बाद भारत बायोलॉजिकल एवं केमिकल सुरक्षा और अनुसंधान में आत्मनिर्भर बन जाएगा। दोनों ही क्षेत्रों में डिटेक्शन संबंधी अनुसंधान एवं बायो डिटेक्टर संबंधी अनुसंधान भी अब लैब में किए जाएंगे। इसके लिए 400 करोड़ की लागत वाला BSL-4 (बायोलॉजिकल सेफ्टी लैब-4) का शिलान्यास मंगलवार को देश की राष्ट्रपति द्रौपदी मुर्मू ने वर्चुअली रूप से किया है। भोपाल में उनके बटन दबाते ही यहां शिलान्यास हुआ। इस लैब में कोरोना जैसे सूक्ष्मजीव पर अनुसंधान किया जा सकेगा। इससे देश में ग्वालियर का नाम होगा।

ग्वालियर स्थित DRDO की एक महत्त्वपूर्ण प्रयोगशाला रक्षा अनुसंधान एवं विकास स्थापना की महाराजपुरा साइट पर एक विश्व स्तरीय BSL-4 प्रयोगशाला का शिलान्यास मंगलवार को भारत की राष्ट्रपति द्रौपदी मुर्मू के द्वारा किया गया है। राष्ट्रपति राजभवन भोपाल के कार्यक्रम स्थल से दूरस्थ माध्यम द्वारा ग्वालियर स्थित प्रयोगशाला का शिलान्यास किया। इस अवसर पर भोपाल राज्यपाल मंगुभाई पटेल एवं मुख्यमंत्री शिवराज सिंह चौहान के अलावा DRDO के महानिदेशक (जैव विज्ञान) डॉ. यूके सिंह मौजूद रहे। यहां महाराजपुरा, ग्वालियर स्थित साइट पर DRDE के निदेशक डॉ. मनमोहन परीडा और वरिष्ठ वैज्ञानिकों के साथ-साथ ग्वालियर के सांसद विवेक शेजवलकर, पूर्व विधायक मुन्ना लाल गोयल एवं रमेश अग्रवाल, ग्वालियर के कलेक्टर कौशलेंद्र विक्रम सिंह, कमिश्नर नगर निगम किशोर कन्याल, CEO जिला पंचायत आशीष तिवारी भी विशेष रूप से मौजूद रहे।

### **लैब में खतरनाक सूक्ष्मजीवों पर रिसर्च होगा**

ग्वालियर के DRDE (रक्षा अनुसंधान एवं विकास स्थापना) की BSL-4 लैब देश की दूसरी और रक्षा मंत्रालय के अंतर्गत पहली प्रयोगशाला होगी। इस लैब में खतरनाक सूक्ष्मजीवों पर अनुसंधान कार्य संभव होगा और भविष्य में होने वाली आपदाओं का सामना प्रभावी ढंग से किया जा सकेगा। इसमें कोरोना जैसे वायरस पर रिसर्च किया जाएगा। यह लैब साल 2026 तक बनकर तैयार हो जाएगी और इसमें अनुसंधान कार्य आरंभ हो जाएंगे। इससे ग्वालियर का देश और देश का दुनिया में नाम होगा।

### **तीन लेयर की सुरक्षा होगी**

DRDE की BSL-4 लैब में अनुसंधान कक्ष की सुरक्षा तीन लेयर की होगी। मतलब लैब में रिसर्च करने वाले साइंटिस्ट को तीन गेट से होकर गुजरना होगा। सभी गेट ग्लास व फाइबर से बने होंगे। ऐसा इसलिए क्योंकि यह लैब में जिन सूक्ष्म जीव का अनुसंधान होगा वह बहुत ही खतरनाक होंगे। किसी तरह वहां से कोई वायरस बाहर निकलता है तो यह हवा के साथ तेजी से फैल सकता है। ऐसा अभी हाल में कोरोना के समय खबरों में सुनाई दिया था कि चीन के किसी शहर में कोरोना पर अनुसंधान करते समय वायरस फैल गया था और उसके बाद काफी बुरे परिणाम सामने आए थे।

### **चीन, रसिया व अमेरिका को टक्कर देगी BSL-4 लैब**

BSL-4 लैब देश की पहली आधुनिक बायोलॉजिकल सेफ्टी लैब होगी। यह लैब अमेरिका, रूस एवं चीन के समकक्ष होगी। ऐसी आधुनिक सुविधाओं वाली लैब अभी भारत में कोई नहीं है। अभी देश में पुणे स्थित बायोलॉजिकल लैब ही सबसे आधुनिक है लेकिन इस लैब में उपकरण काफी पुराने हैं। ग्वालियर की नई लैब में अत्याधुनिक उपकरण लगाए जाएंगे। लैब को थ्री लेयर सिक्युरिटी में बनाया जाएगा। इस लैब में विशेष अनुसंधान करने वाले वैज्ञानिक एक विशेष सुरक्षित सूट पहन कर ही प्रवेश कर सकेंगे। इस लैब में हवा व प्रकाश का भी प्रवेश नहीं होगा। लैब के अंदर हवा फिल्टर होकर ही प्रवेश करेगी और लैब से बाहर भी

हवा फिल्टर होकर ही निकलेगी। लैब में इमरजेंसी एग्जिट भी रहेगा। इस आधुनिक लैब में सभी तरह के बैक्टीरिया एवं वायरस पर रिसर्च तत्परता एवं सुरक्षा से किया जा सकेगा।

### सेना की छावनी जैसी सुरक्षा में होगी BSL-4 लैब

नई लैब की सुरक्षा के लिए 140 एकड़ के परिसर में लगभग 500 मीटर की दूरी पर एक वॉच टावर निर्माण किया जाएगा। लगभग 100 वॉच टावर परिसर के चारों ओर बनाए जाएंगे। इन टावरों पर सशस्त्र बल के जवान आधुनिक हथियारों के साथ लैब की सुरक्षा के लिए तैनात किए जाएंगे। सेना की छावनी जैसा नजारा होगा।

### जैव रासायनिक सुरक्षा में आत्मनिर्भर बनेंगे

DRDE की ओर से बताया गया है कि स्वतंत्रता के 75 वें अमृत उत्सव में देश को जैव एवं रासायनिक सुरक्षा के क्षेत्र में आत्मनिर्भर बनाना है। DRDE की नई लैब इस दिशा में काम करेगी।

<https://www.bhaskar.com/local/mp/gwalior/news/lab-being-built-at-a-cost-of-400-crores-the-country-will-be-self-sufficient-in-jab-chemical-security-130568459.html>

## नईदुनिया

मंगलवार, 15 नवंबर 2022

## रक्षा मंत्रालय की पहली बीएसएल-4 लैब का राष्ट्रपति ने किया शिलान्यास, 2026 में होगी तैयार

डीआरडीओ (रक्षा अनुसंधान एवं विकास संगठन) की नवीन डीआरडीई (रक्षा अनुसंधान एवं विकास स्थापना) लैबोरेटरी का शिलान्यास मंगलवार को राष्ट्रपति द्रौपदी मुर्मू ने वर्चुअल माध्यम से रिमोट दबाकर किया। महाराजपुरा में 143 एकड़ में प्रस्तावित यह बीएसएल-4 लैब रक्षा मंत्रालय की पहली विश्वस्तरीय लैबोरेटरी होगी। राजभवन भोपाल के कार्यक्रम स्थल पर राष्ट्रपति के साथ राज्यपाल मंगुभाई पटेल, प्रदेश के मुख्यमंत्री शिवराज सिंह चौहान, डीआरडीओ के निदेशक (जैव विज्ञान) डा. यूके सिंह उपस्थित थे। वहीं ग्वालियर में लैब के प्रस्तावित स्थल पर आयोजित कार्यक्रम में सांसद विवेक शेजवलकर, डीआरडीई लैब के निदेशक डा. मनमोहन परीडा, बीज विकास निगम के अध्यक्ष मुन्नालाल गोयल, पूर्व विधायक रमेश अग्रवाल, कलेक्टर कौशलेन्द्र विक्रम सिंह, निगमायुक्त किशोर कान्याल व सीईओ जिला पंचायत आशीष तिवारी मौजूद रहे।

राष्ट्रपति द्रौपदी मुर्मू ने भोपाल में जैसे ही रिमोट का बटन दबाया, ग्वालियर स्थित कार्यक्रम स्थल पर लगी शिला का अनावरण हो गया। इस दौरान उपस्थित जनसमूह ने करतल ध्वनि से हर्ष व्यक्त किया।

यहां बता दें कि यह देश की दूसरी और रक्षा मंत्रालय के अंतर्गत पहली प्रयोगशाला होगी, जिसमें खतरनाक सूक्ष्मजीवों पर अनुसंधान कार्य संभव होगा और भविष्य में होने वाली आपदाओं का सामना प्रभावी ढंग से किया जा सकेगा। वर्ष 2026 तक यह प्रयोगशाला बनकर तैयार हो जाएगी और इसमें अनुसंधान कार्य आरंभ हो जाएंगे। वर्तमान में ऐसी देश में इकलौती लैब पुणे में है।

### विशेष प्रयासों से बचीं 10 हजार करोड़ की संपत्तियां

वर्तमान में डीआरडी की लैब सिटी सेंटर में स्थित है, जिसके 200 मीटर के दायरे में निर्माण प्रतिबंधित था। रक्षा मंत्रालय के इसी नियम के आधार पर यहां दस हजार करोड़ की संपत्तियां खतरे में आ गई थीं। मामला हाई कोर्ट में पहुंचा तो अतिक्रमण हटाने के निर्देश दिए गए। इसके बाद माननीयों ने लैब शिफ्टिंग को लेकर कई विभागों को पत्र लिखे। हाई कोर्ट के आदेश पर सुप्रीम कोर्ट में एसएलपी दायर की गई और सुप्रीम कोर्ट ने हाई कोर्ट के आदेश पर स्टे कर दिया। इसके बाद शासन स्तर पर डीआरडी की नई लैब के लिए महाराजपुरा में जमीन आवंटित हुई।

<https://www.naidunia.com/madhya-pradesh/gwalior-gwalior-news-president-lays-foundation-stone-of-defense-ministry-first-bsl4-lab-will-be-ready-in2026-7935202>



*Tue, 15 Nov 2022*

## Flight Mode On: India Looks to Develop Indigenous Engine for its Domestically made MALE UAVs by 2024

India is looking to complete the development of an indigenous engine to power its domestically manufactured unmanned aerial vehicles (UAVs) within the next two years, News18 has learnt. The development of the Kaveri Derivative Engine—a project of the Defence Research and Development Organisation (DRDO)—which will power the indigenously made UAVs is expected to be completed by 2024, senior DRDO officials familiar with the matter told News18.

### Homemade ‘horsepower’

Developed by the Gas Turbine Research Establishment (GTRE), a laboratory of the DRDO, the Kaveri Engine Derivative will power the medium-altitude long-endurance (MALE) UAVs which are being developed by India’s premier R&D organisation. As per a DRDO official, it is a non-afterburning turbofan engine with a thrust of 46kN and a maximum weight of 1,180 kg. As per officials, the Kaveri Derivative Engine certification level ground tests and altitude tests are currently in progress. “The high-altitude tests are in progress currently. The engine endurance testing is being planned as a part of certification of the engine by CEMILAC (Centre for Military Airworthiness & Certification, a laboratory of DRDO),” a second DRDO official said.

He clarified that the CEMILAC clearance is an ongoing process and various tests are progressing as per the certification requirements. The officials did not respond to queries on whether the high-altitude tests for the Kaveri Derivative Engine had faced a delay and the reasons for that. Earlier, DRDO had also designed and developed a small turbo fan engine –derivatives of which would be manufactured for a variety of UAVs—helping India achieve self-reliance in this critical technology.

### **The Kaveri Engine Project**

As per the DRDO, the ‘learning curve’ of the Kaveri engine project has provided an impetus towards the import substitution and has helped enhance the indigenous content of this class of engine to 80%. The Kaveri engine, which was meant to power the indigenous light combat aircraft (LCA), has been under development by GTRE since 1989. But despite developing multiple prototypes of the engine which underwent extensive testing, including in Russia, it could not meet the criteria to qualify as an engine for a fighter aircraft. LCA Tejas Mk 1A was subsequently powered by the GE-F404 engines from the United States. As reported by News18, the latest F414 GE fighter jet engines will power the Mk 2 version of LCA Tejas, which will be manufactured in India post a transfer of technology from the aircraft engine supplier GE Aviation.

Last year, the government told Parliament that a modified engine version is required for induction in the LCA Tejas, since the final operational clearance (FOC) version of it requires a higher thrust. He had also said that the technological capabilities developed by India through the engine project will be utilised. The second official quoted above said that while Kaveri engine components and systems have matured through extensive testing over the years, sourcing aero engine materials and manufacturing technology indigenously for the components had been a challenge due to the lack of a set ecosystem. However, akin to the Kaveri Derivative Engine, DRDO is also working on other derivatives of the engine for a range of platforms and equipment, while continuing its work on the development of the Kaveri engine.

<https://www.news18.com/news/india/flight-mode-on-india-looks-to-develop-indigenous-engine-for-its-domestically-made-male-uavs-by-2024-6385099.html>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Tue, 15 Nov 2022*

### **HAL Hands Over 16th ALH Mk III, Gets LoI for 9 more from Indian Coast Guard**

HAL handed over the last of the 16 ALHs (Mk-III, Maritime role) contracted with the Indian Coast Guard at a program here today to DG Coast Guard V S Pathania in the presence of senior officials from CG, Defence and HAL. “We are proud to be associated with HAL and happy to issue a Letter of Intent (LoI) for nine more helicopters. Despite COVID-19, HAL delivered all the helicopters at the shortest time with seamless production activities and this allows us to strengthen India’s Maritime security”, he said. The CG had signed a contract with HAL for supply of 16 ALH Mk III in March 2017.

Mr. C B Ananthakrishnan, CMD, HAL said a unique feature of the contract has been the Performance Based Logistics (PBL) – the one stop solution for maintenance of these helicopters by HAL. “This will serve as a benchmark for all our future contracts and boost our resolve to work with private partners to speed up the work in the interest of all our customers and strengthen Make-in-India activities in the Defence eco-system”, he added. Mr. S Anbuvelan, CEO (Helicopter Complex), HAL in his address pointed out the major challenges in execution of the contract that included integration of new systems sourced from foreign OEMs, conducting flight trials for certifications and overcoming disruptions in the supply chain due to lock-downs. ALH Mk III is indigenously designed, developed and produced by HAL. The company has so far produced more than 330 ALHs, a versatile helicopter which has logged more than 3.74 lakhs of flying hours.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876117>





**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Tue, 15 Nov 2022*

## **Warship Production Superintendent (WPS) Conclave**

Warship Production Superintendent (WPS) Conclave Chaired by Vice Admiral Kiran Deshmukh, Controller Warship Production and Acquisition (CWP&A) was organised by Warship Overseeing Team, Kolkata on 15 Nov 22. The Conclave was attended by RAdm Sandeep S Sandhu, ACCP & ACWP&A, Senior Officers from Warship Design Bureau and Directorate of Ship Production from IHQ MoD(N), all 07 Warships/ Submarine Production Superintendents and Officers of Warship Overseeing Team and Submarine Overseeing Team.

WPS conclave provided a common forum for exchange of ideas and latest production and project management techniques being followed by DPSUs and Private Shipyards towards improving the defence shipbuilding process in India. Various challenges faced by WOT's, lessons learnt and innovative methods utilized to resolve these issues were also deliberated. The Conclave provided an opportunity to discuss ways and means to achieve 100% indigenization in Defence Shipbuilding sector in line with our Hon'ble Prime Minister's vision of "AatmaNirbhar Bharat". The Conclave 2022 also coincided with the 60<sup>th</sup> anniversary of WOT (Kolkata).

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876195>



**Press Information Bureau  
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**Ministry of Defence**

*Tue, 15 Nov 2022*

## **Green Mobility Initiative by IAF**

In order to achieve reduction in carbon foot print and in keeping with the Gol's initiative on introduction of green mobility, IAF has inducted a fleet of Tata Nexon Electric Vehicles. A flag-off ceremony was held at Air Force Headquarters, Vayu Bhawan on 15 November 2022. Air Chief Marshal VR Chaudhari, Chief of the Air Staff flagged off the first batch of 12 electric vehicles in the presence of other senior officers and staff. Indian Air Force is planning to enhance the usage of electric vehicles in a progressive manner by procuring e-vehicles against downgraded conventional vehicles. Augmentation of the e-vehicles ecosystem, including installation of charging infrastructure at various Air Force bases, is also planned. The first batch of electric cars introduced today will be deployed in Delhi NCR units for performance monitoring and analysis.

To create a standardised inventory of vehicles, IAF has already joined hands with Indian Army in the ongoing procurement of Electric Buses and Electric Cars. These proactive measures reaffirms IAF's commitment to the National objective of transformation towards environment friendly mobility.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876091>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Tue, 15 Nov 2022*

## **Indo - US Joint Training Exercise “Yudh Abhyas 2022” to Commence in Uttarakhand**

The 18<sup>th</sup> edition of Indo - US joint training exercise “YUDH ABHYAS 22” is scheduled to be conducted in Uttarakhand this month. Exercise Yudh Abhyas is conducted annually between India and USA with the aim of exchanging best practices, Tactics, Techniques and Procedures between the Armies of the two nations. The previous edition of the exercise was conducted at Joint Base Elmendorf Richardson, Alaska (USA) in October 2021. US Army soldiers of 2<sup>nd</sup> Brigade of the 11<sup>th</sup> Airborne Division and Indian Army soldiers from the ASSAM Regiment will be participating in the exercise. The training schedule focuses on employment of an integrated battle group under Chapter VII of the UN Mandate. The schedule will include all operations related to peace keeping & peace enforcement. The troops from both nations will work together to achieve common objectives. The joint exercise will also focus on Humanitarian Assistance and Disaster Relief (HADR) operations. Troops from both nations will practice launching of swift & coordinated relief efforts in the wake of any natural calamity.

In order to derive full benefit from the professional skills & experiences of both the armies, a Command Post Exercise and Expert Academic Discussions (EAD) on carefully selected topics will be carried out. The scope of the Field Training Exercise includes validation of integrated battle groups, force multipliers, establishment and functioning of surveillance grids, validation of operational logistics, mountain warfare skills, casualty evacuation and combat medical aid in adverse terrain and climatic conditions. The exercise will involve exchanges and practices on a wide spectrum of combat skills including combat engineering, employment of UAS/Counter UAS techniques and information operations. The exercise will facilitate both Armies to share their wide experiences, skills and enhance their techniques through information exchange.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876038>

## LAC पर चीन को मुंहतोड़ जवाब की तैयारी, पूर्वी लद्दाख में सेना तेजी से कर रही है बुनियादी ढांचे का विकास

पूर्वी लद्दाख में लाइन ऑफ एक्चुअल कंट्रोल (LAC) पर चीन की बढ़ती आक्रामकता का जवाब देने के लिए सेना ने अपने बुनियादी ढांचे के विकास के काम में काफी तेजी लाई है. खासकर गलवान घाटी में जून में चीन के साथ हुए खूनी झड़प के बाद अपनी क्षमता बढ़ाने पर सेना ने खासा जोर दिया है. इसमें सैनिकों के रहने के लिए नए आवास से लेकर पेट्रोलिंग के लिए बोट के साथ-साथ रोड कनेक्टिविटी के लिए सड़क और नए पुल बनाने का काम युद्ध स्तर पर किया जा रहा है. लद्दाख पहुंचने के लिए कई वैकल्पिक रास्तों का निर्माण भी किया जा रहा है, ताकि सालों भर आवाजाही का रास्ता बना रहे

पूर्वी लद्दाख के हाई एलटिच्यूड इलाके में जहां पहले करीब 10 हजार जवानों के रहने का इंतजाम था, अब वह संख्या 22 हजार तक जा पहुंची है. यहां केवल सैनिकों के रहने के लिए ढांचा ही तैयार नहीं किया गया है, बल्कि पानी और बिजली समेत तमाम सुविधाओं का इंतजाम किया गया है. जवानों को पीने का स्वच्छ पानी मुहैया कराने के लिए तालाब बनाए गए हैं, ताकि उनको सालों भर पीने को ताजा पानी मिल सके. ये घर ऐसे हैं कि जिन्हें कहीं भी 2-3 दिनों के भीतर ले जाया जा सकता है. ये पूरी तरह से आधुनिक और कॉम्पैक्ट हैं. ये शेल्टर 15000, 16000 और 18000 फीट की ऊंचाई पर स्थापित किए गए हैं.

सैनिकों के लिए सेना ने बख्तरबंद वाहनों और गन सिस्टम को रखने के लिए 450 ऐसे तकनीकी भंडार बनाए हैं, जहां पर कम तापमान में भी वाहनों और हथियार प्रणालियों की दक्षता कम नहीं हो सके. फ्रंट लाइन के बंकरों पर ऐसे थ्री डी प्रिंटिंग डिफेंस स्ट्रक्चर्स या 3डी बंकर तैनात किये जा रहे हैं, जिससे बंकर पर अगर टी-90 जैसे टैंक से 100 मीटर की दूरी से हमला किये जाएं, तब भी वे इसका सामना कर पाएंगे.

इतना ही नहीं लद्दाख में कठोर मौसम को मात देने के लिए सेना ने जवानों के लिए 20 सौर उर्जा से चलने वाले लद्दाखी शेल्टर बनाए हैं. जहां एक इकाई में 3-4 सैनिक रह सकते हैं. इसमें जब बाहर का तापमान -20 डिग्री में होता है तो अंदर का 20 डिग्री तापमान होता है. यह सैनिकों को गर्म रखता है. हाल ही में सेना ने पहली बार उच्च ऊंचाई वाले क्षेत्र में सर्वत्र और पीएमएस सहित असॉल्ट ब्रिज के निर्माण के लिए सफलतापूर्वक परीक्षण किया. DRDO द्वारा विकसित और BEML द्वारा बनाया गया, सर्वत्र ब्रिज सिस्टम पूरी तरह से स्वदेशी, उच्च गतिशीलता वाले वाहन-आधारित, मल्टी स्पैन मोबाइल ब्रिजिंग

सिस्टम है. कोशिश यह हो रही है कि चीन से सीमा पर आवाजाही में कोई दिक्कत ना हो. बड़ी तदाद में सड़कों का जाल फैलाया जा रहा है. नये पुल बनाये जा रहे हैं.

जैसे लेह से पहले डीबीओ यानि कि दौलत बेग ओल्डी एयरबेस जाने में सात दिन लगते थे, फिर दो दिन लगने लगा और अब मात्र छह घंटे में लेह से डीबीओ आसानी से पहुंचा जा सकता है. पेंगोंग त्सो झील में गश्त करने की क्षमता को बढ़ाने के लिए नए लैंडिंग क्राफ्ट शामिल किए गए हैं. इससे पेट्रोलिंग में काफी मदद मिली है. यह 35 सैनिकों या 1 जीप और 12 पुरुषों को ले जा सकता है.

आपको बता दें कि पूर्वी लद्दाख में अब भी भारत और चीन की सेनाएं आमने-सामने हैं. अभी भी सेनाओं के बीच तनाव का माहौल कायम है. सरहद के दूसरी ओर चीन बड़ी तेजी से अपने बुनियादी ढांचे को मजबूत करने में लगा है, तो इस मामले में भारत भी पीछे नहीं रहना चाहता है. यही वजह है कि चीन से लगी सीमा पर सैनिकों के लिये बुनियादी ढांचे का काम जोर-शोर से किया जा रहा है. खासकर जब से चीन के साथ सीमा पर तनातनी बढ़ी है तो यह काम तेजी से किया जा रहा है. बुनियादी ढांचे का निर्माण इस तरह हो रहा है कि जरूरत पड़ने पर सीमा पर सेना की तैनाती जल्द से जल्द किया जा सके.

<https://ndtv.in/india/army-is-developing-infrastructure-in-east-ladakh-ready-to-respond-to-china-on-lac-3523141>

## THE ECONOMIC TIMES

*Tue, 15 Nov 2022*

### **Army Creating New Defences in Ladakh, Shoring up Infra**

The Army is creating new permanent defences in eastern Ladakh that can withstand direct hits by tanks at close range and be set up within days given a new modular design worked out with help of the industry. As part of a major infrastructure push along the China border, the Army has created portable shelters for over 22,000 troops, strengthened bridges for heavier class of vehicles and is creating underground ammunition storage facilities, sources in the defence establishment said. A crucial part of scaling up of capabilities is the setting up of new 3D printed structures by the Corps of Engineers that can house troops and will act as permanent defences in eastern Ladakh, including the contested areas of Galwan, Hot Springs and the Pangong Tso area.

Sources said Indian startups based in Gandhinagar, Bengaluru and Hyderabad have been involved in creating these new 3D printed structures that are man portable and can be set up at forward locations within two days. "A lot of work was done on 3D printed defences with startups incubated at IIT Gandhinagar and we have finally come up with structures that can take a direct hit from a T 90 tank at a distance of just 100 meters. Trials are being conducted along the northern borders and by next year, we will start installing them," a source said. The unique defences - essentially bunkers that can house well entrenched troops - can be easily set up in forward areas as each 3D printed part will not weigh more than 40 kg and can be carried by a two-man team. Besides, habitat and technical storage for 22,000 troops and over 450 tanks and heavy guns have also been constructed in the area.

"Post Galwan, habitats for over 20,000 troops were created over two working seasons. These are the latest, modular habitats that are temperature controlled and can be easily relocated if the need arises," a source said, adding that work is also on to create new tunnels that can be used to safely store ammunition. A major drive is also on for increasing connectivity in Ladakh, with the Corps of Engineers currently engaged in upgrading airfields and creating a new runway at Nyoma. Sources said that with the new roads that have been constructed, the travel time from Leh to the strategically located Daulat Beg Oldie (DBO) airfield has been reduced from two days to six hours. The Corps of Engineers is also overseeing connectivity to Ladakh from the rest of the country, with sources saying that a new tunnel at Shinkula, which will create an alternate access to Ladakh through the Zaskar valley, will be ready for use by 2026. A new road for access to DBO is also being constructed through the Nubra valley.

<https://economictimes.indiatimes.com/news/defence/army-creating-new-defences-in-ladakh-shoring-up-infra/articleshow/95540778.cms>

## THE ECONOMIC TIMES

*Tue, 15 Nov 2022*

### **Amid Chinese Buildup, Indian Army Built Infra for 450 Tanks, 22,000 Additional Troops in Eastern Ladakh**

Amid reports of Chinese buildup across the Line of Actual Control, the Indian Army has built infrastructure for housing 450 tanks and over 22,000 troops in the Eastern Ladakh sector opposite China, defence sources said. The sources said that to counter the Chinese aggressive movements in the Pangong Tso lake which is both in India and China, Indian Army's Corps of Engineer has inducted new Landing Crafts in both Eastern Ladakh which has given a huge impetus to the patrolling capabilities and induction in men and material. The assault craft can carry 35 troops or one keeps with 12 men.

"Habitat and technical storage to include assets for 22,000 troops and approximately 450 A vehicles/guns have been constructed in the last two years. Focus has now shifted to undertake the construction of Permanent defences and infrastructure to improve defence preparedness in extant working season apart from completion of ongoing projects," defence sources said here.

Speaking about the permanent defences being built along the borders, Indian Army's Engineer in Chief Lt Gen Harpal Singh said: "3D-printed permanent defences have been constructed for the first time by Indian Army's Corps of Engineers in the desert sector. These defences were trial tested against a range of weapons from small arms to the main gun of T90 tank." He added that such defences are able to withstand blasts, can be erected within 36-48 hours, and can be relocated from one place to another. "With this, trial for similar permanent defences have also been carried out at eastern Ladakh and found to be useful," he said.

Highlighting the infrastructure development being done by the Border Roads Organisation along the China border, defence sources said that presently nine tunnels which include a "2.535 Km long Sela tunnel, which will be the highest bi-lane tunnel in the world once completed. 11 more tunnels are also under planning." "The BRO has been entrusted with the task of constructing one

of India's highest airfields at Nyoma which is very close to the China border and will boost Indian capabilities there," they said.

<https://economictimes.indiatimes.com/news/defence/amid-chinese-buildup-indian-army-built-infra-for-450-tanks-22000-additional-troops-in-eastern-ladakh/articleshow/95538199.cms>

## THE HINDU BusinessLine

*Tue, 15 Nov 2022*

### **BEL Signs Multiple Defence MoUs**

Bharat Electronics Ltd (BEL) signed memoranda of understanding with five companies involved in the defence industry, including Hindustan Shipyard Limited, Yantra India Limited, Profense LLC, US, SVC TECH VENTURES LLP and Spacefaring Technologies. The MoU between Hindustan Shipyard Limited and BEL is intended to carry out joint development, manufacturing, and product upgrades of identified products/systems and to take advantage of the emerging opportunities in the domestic defence, non-defence, and export markets. BEL and SVC TECH VENTURES LLP have also signed an MoU for cooperation in the manufacturing and marketing of heavy-duty blast doors.

To meet the needs of the Indian defence and export sectors, BEL and Yantra India Limited will collaborate in the fields of ammunition hardware and military-grade components. BEL will work together with Profense LLC, US, on the production and sale of light weapons. BEL has signed an MoU with Spacefaring Technologies Pvt Ltd for cooperation in technology development in the field of fabric-based radome, shelters, deployable space habitats, aerostat, and more, for defence and non-defence applications.

<https://www.thehindubusinessline.com/companies/bel-signs-multiple-defence-mous/article66140397.ece>



*Tue, 15 Nov 2022*

### **PM Modi, US President Joe Biden Meet in Bali; Technologies, Artificial Intelligence Discussed**

Prime Minister Narendra Modi and US President Joe Biden on Tuesday reviewed the state of India-US strategic partnership including in sectors like critical and emerging technologies and artificial intelligence. The two leaders also discussed topical global and regional developments in their meeting that took place on the margins of the G-20 summit in this Indonesian city, the

Ministry of External Affairs (MEA) said. It is understood that the Ukraine conflict and its implications figured in the discussions.

The MEA said the two leaders expressed satisfaction about close cooperation between India and US in new groupings such as Quad and I2U2. “Prime Minister Narendra Modi met President of USA, Joseph R Biden on the margins of G-20 Leaders’ Summit in Bali today,” the MEA said. “They reviewed the continuing deepening of the India – US strategic partnership including cooperation in future oriented sectors like critical and emerging technologies, advanced computing, artificial intelligence, etc,” it said in a statement. The MEA said the two leaders discussed topical global and regional developments.

“PM Modi thanked President Biden for his constant support for strengthening the India-US partnership. He expressed confidence that both countries would continue to maintain close coordination during India’s G-20 Presidency,” it said. While the Quad comprises India, the US, Australia and Japan, the members of the I2U2 are the US, the United Arab Emirates and Israel. India is currently part of the G20 Troika (current, previous, and incoming G20 Presidencies) comprising Indonesia, Italy, and India. The prime minister is attending the summit at the invitation of Indonesian President Joko Widodo. Indonesia is the current chair of the G-20.

<https://www.financialexpress.com/defence/g20-summit-pm-modi-us-president-joe-biden-meet-in-bali-technologies-and-artificial-intelligence-discussed/2816102/>



*Tue, 15 Nov 2022*

## **Decoding ‘HIMARS’ ‘Design Philosophy’, Latest Images Show Russia could be Analyzing Deadly US Rockets**

*By Parth Satam*

A picture of one such rocket went around on pro-Russian groups and pages on social media, where many handles claimed it was acquired through espionage means and transported to Russia through a third country. Experts believe Russia will specifically look at the HIMARS missile’s guidance system and enhance the countermeasures it had developed against it a few months ago, and further limit its effectiveness. The Russian Ministry of Defence (MoD) did not officially comment on the matter, but the message circulated on multiple Twitter handles. The Lockheed Martin M142 HIMARS is the third big weapons system, along with the Javelin and the M777 lightweight howitzer that the United States armed Ukraine with in July this year as a part of a \$270 million package. The complex of six tube rockets is mounted on a wheeled truck that is guided via satellite navigation and can deliver a variety of ammunition and explosives on targets at nearly 100 kilometers.

The HIMARS initially reportedly achieved many tactical successes, destroying Russian military bases, ammunition depots, and some command and control centers. The Russian Ministry of Defense (MoD) later claimed having destroyed several HIMARS launchers and intercepted at least a hundred HIMARS rockets using its air defense (AD) systems. EurAsian

Times had done a cost-benefit, tactical and comparative analysis of the HIMARS and its Russian equivalent, the 9A54 Tornado. The latter was cheaper, with more range and a greater payload.

The HIMARS was last used by Ukraine on Sunday, according to Russia, which accused the Armed Forces of Ukraine (AFU) of firing five rockets into the Sabovka suburb of Luhansk. The Luhansk People's Republic (LPR) Representative Office made a claim. "Information about the victims and damage is being specified," the LPR statement said. Before that, on November 11, Russian MoD said it intercepted 33 HIMARS rockets.

### **What Will Russia 'Study' in the HIMARS?**

A screenshot of a tweet shared in another Twitter post, showing a HIMARS rocket head on a table while attached to various devices with wires, piqued everyone's curiosity. Former Indian Air Force (IAF) fighter pilot Rajiv Tyagi believes the Russians could be attempting to understand the rocket's guidance system (either the Inertial Navigation System or the Global Positioning System). The frontmost part of such missiles/rockets houses the seeker (depending upon the type of missile), the guidance system, and the warhead, followed by the rocket motor and the exhaust. The guidance is connected to and drives movable fins (or surface controls, rudders) on the missile's body to change and manipulate its flight path. The HIMARS rocket's fins seem to have been located on the nose cap.

Former Defence Research and Development Organization (DRDO) Scientist 'G' Ravi Gupta said countries with advanced industrial, defense manufacturing, and scientific bases are less likely to completely reverse engineer an enemy system and would be specifically interested in a particular technology or component. Gupta, too, believes that Russia might be interested in the HIMARS's guidance, navigation, and guidance control system. "They are likely to examine the 'design philosophy' of the HIMARS rocket and find its weak and blind spots to make it miss the target," Gupta said. After identifying precise countermeasures, the next step would possibly be to make a better product that covers the captured system's shortcomings," he adds. Aerodynamic performance around the rocket's body is another area Russian engineers might try and study.

Talking about reverse engineering in general, Gupta said peer competitors "enhance their knowledge base" in areas they are lagging in and usually do not precisely and fully replicate a complete platform. In other words, Russia is unlikely to reverse engineer everything from the HIMARS rocket's guidance, guidance control, materials, and propulsion motor. "Russia has been known to have excellent capability in metallurgical sciences while the US is relatively more advanced in composite materials that involve carbon fibers. This doesn't mean Russia is poor in carbon-fiber composites, and the US lags in metallurgy. It is just a scientific field a country ends up advancing in slightly, but while maintaining significant capabilities in others," Gupta explained.

### **HIMARS's Importance for Ukraine?**

The HIMARS initially allowed Ukraine to meet its gap in artillery systems compared to Russia, which used long-range gun and tube rocket systems, part of its doctrine where ground forces move to support artillery and not the other way around. The system's combination of accuracy and range was an improvement over its Soviet-era 122 mm Grad, 200 mm Smerch, and 220 mm Uragan systems, which were unguided rockets. It did take out many Russian



ammunition depots and supply lines in the rear before Russia found a way to intercept the rockets.

The EurAsian Times had reported how the Buk-M3 medium-range surface-to-air-missile (SAM) system had emerged as the favorite to attack HIMARS. Capable of detecting targets flying as low as five meters, the Buk-M3 extrapolates the launcher's exact location by tracking the multiple rockets fired from the launcher in short intervals. The HIMARS fires rockets like the M26, M26A2-ER, Guided Multiple Rocket Launch (GMLRS) M30, GMRLS M31/M31A1/M31A2, and the GMLRS XM404 and XM403. The US, last week on November 10, approved the sale of 400 GMLRS rockets to Finland, ostensibly to protect against a possible clash with Russia. The deal costs \$535 million and includes other related elements and logistics support systems.

<https://eurasianimes.com/decoding-himars-design-philosophy-latest-images-show-russia-could-be-analyzing-deadly-us-rockets/>

## THE ECONOMIC TIMES

*Tue, 15 Nov 2022*

### **Amid Tensions with China, Taiwan Shows off Military Drones**

Taiwan displayed its self-developed drone technology Tuesday, amid rising concerns over China's threats to use force to assert its claim to the self-governing island republic. The National Chung-Shan Institute of Science and Technology, which develops military technology, offered a rare look at the Jian Xiang drone designed to destroy enemy radars, and other unmanned combat aerial vehicles. A dozen of the single-use drones, officially termed loitering munitions, are carried on a truck. Launched with a built-in rocket, they are guided by a propeller engine before crashing into their targets. Any country that is "confident in itself" will come up with strategies and develop defense technologies, said Chi Li-ping, director of the institute's Aeronautical System Research Division. Unmanned combat aerial vehicles are "a future trend," Chi said. "This is why we are doing research about it and laying out some strategies."

Taiwan's army began taking delivery last month of the first of 100 helicopter drones ordered from the institute. Chi emphasized their importance in relaying images to the army's command and communication systems for analysis and forwarding to combat units. Taiwan has also developed the Teng Yun, which resembles the American MQ-9 Reaper unmanned aerial vehicle and can stay aloft for up to 24 hours. While the U.S. and others have long used drones in the targeting of alleged terrorists and others, they have proved especially important in the Russian war on Ukraine. Moscow has imported drones from Iran while Kyiv has found success with inexpensive Bayraktar TB2 unmanned aerial vehicles from Turkey, which carry lightweight, laser-guided bombs. China, meanwhile, has forged ahead with developing its own drones, some models of which have been exported. China upped its military threat against Taiwan in August in response to a visit by U.S. House Speaker Nancy Pelosi to the island. It shot missiles over the island and held live-fire military drills in six self-declared zones in what appeared to be a rehearsal for a potential blockade and invasion of the island that would almost certainly draw in

Taiwan's chief supporter, the United States, along with American allies including Japan and Australia.

<https://economictimes.indiatimes.com/news/defence/amid-tensions-with-china-taiwan-shows-off-military-drones/articleshow/95537523.cms>



*Wed, 16 Nov 2022*

## **China's 'Satellite Killer' SLC-18 Radar could make its way to Pakistan; Can Detect & Track Multiple Low Earth Orbit (LEO) Satellites**

The radar was displayed for the first time at the China International Aviation and Aerospace Exhibition in Zhuhai (Guangdong), which concluded on November 13. The ten-meter-tall SLC-18 radar is said to be particularly successful in detecting and tracking multiple Low Earth Orbit (LEO) satellites in all conditions. LEO satellites are located anywhere from 200 kilometers to 2,000 kilometers above the Earth's surface. These satellites are used primarily for data collection and military surveillance and have steadily evolved into critical equipment for powerful countries seeking remote intelligence. LEO satellites can carry out intense, 360-degree, and all-factor hotspot surveillance thanks to their powerful capability, small size, and flexible orbits. China's new radar is capable of monitoring such satellites.

The SLC-18 was developed by the state-owned China Electronics Technology Group Corporation (CETC), which also manufactures electronic systems and components, missiles, radars, and other weapons for the People's Liberation Army (PLA). Sun Lei, CETC deputy general manager, said, "This radar will allow friendly countries to locate targets in space." The statement hints at China's desire to provide Pakistan with a radar system. The system provides capabilities for situational awareness against low-orbiting satellites to balance the tactical stance. This radar is substantially less expensive than others in its class, adding an affordability factor for Pakistan. It is important to note that India is a significant space power with a diverse array of satellites in orbit. This enables New Delhi to monitor Islamabad's every action. However, with the SLC-18 radar, Pakistan could detect where the Indian satellites are.

China and Pakistan have close ties, referring to one another as "iron brothers" and "all-weather allies" in their bilateral declarations. China is Pakistan's top supplier of military equipment, including aircraft, missiles, and warships. Islamabad is also crucial to China's ambitious Belt and Road Initiative. Highlighting that point, Sun emphasized that the SLC-18 radar's situational awareness against LEO satellites and competitively priced ground-based space target monitoring can help the Belt and Road Initiative. In the five years between 2017 and 2021, according to data from the Swedish research tank SIPRI, which contains information on weapon transfers, Pakistan imported 72% of its total weapons from China, and it was also the end recipient of 47% of all of China's major arms exports.

In addition, China has armed Pakistan with its HQ 9/P HIMADS (High to Medium Air Defense System), which was inducted into the Pakistan Army Air Defense in October 2021. With a single-shot kill probability, the HQ 9 can intercept various air targets, such as aircraft, cruise missiles, and weapons, beyond the optical range of more than 100 kilometers.

### **SLC-18 Radar Capabilities**

The SLC-18 radar, a P-band solid-state active phased array radar, is primarily used to detect space targets. It can track and measure several objects while searching for and capturing LEO satellites and other space targets. Sun told the Global Times that the SLC-18 radar could identify and catalog satellites to create a radar database, which may be used to direct other equipment to respond accordingly. This development also alters the traditional practices of developing nations purchasing satellite data from developed countries, which may be compromised and very expensive because they lack the necessary space-based resources and platforms. The SLC-18 can detect satellites from a distance and relay satellite data to the command center to help make decisions. It has wide-area detection capability, allowing it to instantly record a satellite's orbit and enter it into a database. Based on the orbit parameters, it can immediately assess whether it is a new satellite type and its primary usage.

Sun pointed out that the radar has essential advantages such as all-weather, all-time, multi-target, immense power, and extensive search areas, which can identify LEO targets in various airspace and cover many LEO satellite targets. He added that the radar is entirely built in China, from chip production to manufacturing. It also uses a modular design to extend its capabilities as needed. This suggests that China's radar development has advanced to a new level.

<https://eurasianimes.com/new-china-satellite-killer-slc-18-radar-could-make-its-way-to-pakistan-can-detect-track-multiple/>

## Science & Technology News



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### **Graphene-Stabilised Tunable Photonic Crystal can make more Durable & Better Reflective Display and Lasers Devices**

A soft tunable photonic crystal with enhanced thermal stability and optical purity developed by researchers that reflects vivid colours in the visible spectrum has potential applications in

making more durable and better reflective displays and laser devices. This affects the propagation of light in the same way that the structure of natural crystals gives rise to X-ray diffraction and that the atomic lattices (crystal structure) of semiconductors affect their conductivity of electrons. Photonic crystals occur in nature in the form of structural coloration and animal reflectors. Examples found in nature include opal, butterfly wings, peacock feathers, etc., exhibiting distinct iridescent colours.

When artificially produced or engineered in laboratories, photonic crystals promise to be useful in a range of applications ranging from reflection coatings to optical computers. They enable the PCs to exhibit structural colours in the visible spectral regime. Ever since researchers have learnt how to fabricate photonic crystals, they have been on the constant lookout for tuning the properties in-situ post-fabrication. Liquid crystalline (LC) materials exhibiting self-organization, phase transition, and molecular orientation behaviors in response to external stimuli are attracting significant attention for tuning of advanced photonic materials and devices.

Blue phase (BP), a unique thermodynamic phase of liquid crystals, is a 3D photonic crystal by virtue of the combination of a cubic lattice structure and fluidity. With the lattice spacing of a few hundred nanometres, the cubic BP exhibits selective reflection of colours in the visible spectrum. Due to the soft stimuli responsiveness of BP, the Photonic Band Gap (PBG) (phenomenon that prevents light of certain frequencies or wavelengths from propagating in one, two, or any number of polarisation directions within the materials) can be efficiently tuned with relatively low-magnitude thermal, electric and optical fields.

However, fabricating devices is still a challenge given the drawbacks BP suffers from, leading to operational difficulties. The low thermal stability and polycrystalline nature limit achieving vivid colours over a large area for device applications. A research team from the Centre for Nano and Soft Sciences (CeNS), an autonomous institute of the Department of Science and Technology (DST), has overcome precisely these two challenges and developed a BP system which operates in the visible spectrum with high optical purity and enhanced thermal stability.

The feat is achieved by the team led by Dr. Geetha Nair by confining the BP between a pair of graphene substrates, prepared using a facile technique developed by Prof. G U Kulkarni, Director, Jawaharlal Nehru Centre For Advanced Scientific Research, Bengaluru, and his group, collaborators of this work. The non-covalent interaction between the hexagonal 2-D arrangement of carbon atoms of graphene and the liquid crystal molecules and the improved wettability helped improve the thermal stability and optical purity.

The importance of the work lies in the fact that the enhancement seen in the optical and thermal properties of BP has been achieved using an easy-to-fabricate cost-effective technique making the process highly suitable for large-scale applications. An additional dimension of tunability of colours is added by incorporating a UV-light-sensitive dye into the system. Ms. Nurjahan Khatun, the Ph.D. student who worked on the project, says, “The prototype device developed at the lab level is found to be stable at room temperatures for over six months.”

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876132>

*Wed, 16 Nov 2022*

## **NASA Launches Artemis-1 Mission to Moon**

Nasa is once again at it - attempting to launch its mega-Moon rocket to the Moon. The American space agency is conducting the third attempt to launch the Artemis-1 mission on a journey to the Moon. The Space Launch System will lift off with the Orion spacecraft in a two-hour launch window from the Kennedy Space Centre on Wednesday. The launch will be a foundation for a future crewed mission as countries from across the world ready their plans to launch to the Moon. Nasa has tried to launch the mission twice in the past, but the attempts have been unsuccessful due to engine issues and hydrogen leaks. Liftoff is scheduled for the early morning hours of Wednesday from Nasa's Kennedy Space Center, with test dummies rather than astronauts on board. It's the first test flight for the 322-foot (98-meter) rocket, the most powerful ever built by Nasa, and will attempt to send the capsule into lunar orbit.

The nearly monthlong \$4 billion mission had been grounded since August by fuel leaks and Hurricane Ian, which forced the rocket back into its hangar for shelter at the end of September. The rocket remained at the pad for Nicole; managers said there wasn't enough time to move it once it became clear the storm was going to be stronger than anticipated.

<https://www.indiatoday.in/science/story/watch-live-nasa-launches-artemis-1-mission-to-moon-2297624-2022-11-16>



*Tue, 15 Nov 2022*

## **WHO Chief Thanks PM Modi for Collaboration in Building Global Traditional Health Centre**

WHO chief Tedros Adhanom Ghebreyesus on Tuesday thanked Prime Minister Narendra Modi for collaborating with the world health body on hosting and building the global traditional health centre. Prime Minister Modi, World Health Organisation Director-General Ghebreyesus and Mauritius Prime Minister Pravind Jugnauth laid the foundation stone for the WHO Global Centre for Traditional Medicine (GCTM) in Gujarat's Jamnagar city in April. The centre, supported by an investment of USD 250 million from India, aims at harnessing the potential of traditional medicine from across the world through modern science and technology to improve the health of people and the planet, according to the WHO.

Taking to Twitter, Ghebreyesus, who is in Bali to attend the ongoing G20 summit, tweeted,

“Thank you #India Prime Minister @narendramodi for your collaboration with @WHO on hosting and building the global traditional health centre. Together for #HealthForAll! #G20.”

Ghebreyesus also posted a picture of him with Prime Minister Modi at the G20 Summit in Bali.

According to WHO, around 80% of the world’s population is estimated to use traditional medicine. To date, 170 of the 194 WHO member states have reported the use of traditional medicine, and their governments have asked for WHO’s support in creating a body of reliable evidence and data on traditional medicine practices and products.

During his address at the G20 Summit, Ghebreyesus underlined that food and energy are fundamental to human life, and human health. The lack of either, or their over-consumption, can have severe consequences for health and economies.

“The heaviest price for the crises in food and energy security is paid in human health. My ask for the @g20org leaders is to ensure that measures to protect and promote health are central to the global response,” he added.

<https://www.financialexpress.com/defence/g20-summit-in-bali-who-chief-thanks-pm-modi-for-collaboration-in-building-global-traditional-health-centre/2816119/>

