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## DRDO News

## DRDO Technology News



पत्र सूचना कार्यालय  
भारत सरकार

रक्षा मंत्रालय

Wed, 15 Mar 2023

### चीफ ऑफ डिफेंस स्टाफ ने नई दिल्ली में रक्षा अनुसंधान एवं विकास संगठन की 'ह्यूमन फैक्टर्स इंजीनियरिंग इन मिलिट्री प्लेटफॉर्म' विषय पर दो दिवसीय कार्यशाला का उद्घाटन किया

सैनिकों के लिए उपयुक्त स्वदेशी हथियार बनाने के उद्देश्य से गुणात्मक आवश्यकताओं और डिजाइन चरण में ह्यूमन फैक्टर्स इंजीनियरिंग को शामिल करने की आवश्यकता: जनरल अनिल चौहान

चीफ ऑफ डिफेंस स्टाफ जनरल अनिल चौहान ने 15 मार्च, 2023 को नई दिल्ली में 'ह्यूमन फैक्टर्स इंजीनियरिंग इन मिलिट्री प्लेटफॉर्म' पर दो दिवसीय कार्यशाला का उद्घाटन किया। इस कार्यशाला का आयोजन रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की दिल्ली स्थित प्रयोगशाला डिफेंस इंस्टीट्यूट ऑफ फिजियोलॉजी एंड एलाइड साइंसेज (डीआईपीएस) द्वारा किया गया है।

इस कार्यशाला के आयोजन का उद्देश्य रक्षा क्षेत्र में ह्यूमन फैक्टर्स इंजीनियरिंग (एचएफई) के वैज्ञानिक क्रियान्वयन को सुनिश्चित करने के लिए एक नीतिगत ढांचे का निर्माण तथा आवश्यक कार्य प्रणालियों को विकसित करना है, जिससे 'आत्मनिर्भर भारत' के दृष्टिकोण को गति प्रदान की जा सके। ह्यूमन फैक्टर्स इंजीनियरिंग सुरक्षित व प्रभावी उपयोग के लिए मानव क्षमताओं एवं सीमाओं को ध्यान में रखते हुए उपकरणों और प्रणालियों के डिजाइन से संबंधित विज्ञान है।

चीफ ऑफ डिफेंस स्टाफ ने अपने संबोधन में सैनिकों के लिए उपयुक्त स्वदेशी हथियार बनाने हेतु गुणात्मक आवश्यकताओं तथा डिजाइन के स्तर पर ह्यूमन फैक्टर्स इंजीनियरिंग की

गतिविधियों को शामिल करने की आवश्यकता पर बल दिया। उन्होंने लंबे समय तक चलने वाली लड़ाइयों और छोटी अवधि के विशेष रक्षा अभियानों को ध्यान में रखते हुए एकीकृत रक्षा कर्मचारियों की भागीदारी के माध्यम से एचएफई के कार्यान्वयन के लिए एक सहक्रियाशील दृष्टिकोण व नीतिगत ढांचा तैयार करने का आह्वान किया।

इस अवसर पर रक्षा अनुसंधान एवं विकास संगठन के सचिव और डीआरडीओ के अध्यक्ष डॉ. समीर वी. कामत ने भी संबोधित किया। उन्होंने उत्पाद विकास चक्र के अभिन्न अंग के रूप में ह्यूमन फैक्टर्स इंजीनियरिंग के कार्यान्वयन के लिए डीआरडीओ द्वारा की गई पहल का उल्लेख किया। डॉ. समीर वी. कामत ने इस तथ्य पर जोर दिया कि यह सुनिश्चित किया जाना आवश्यक है कि तैयार किये गए उत्पाद न केवल भारतीय सैनिकों के लिए विकसित किए गए हैं बल्कि ये निर्यात हेतु भी उपलब्ध हैं। उन्होंने कहा कि आर्टिफिशियल इंटेलिजेंस और रक्षा उपकरणों के लिए प्रणालीगत स्वायत्तता के युग में ह्यूमन फैक्टर्स इंजीनियरिंग की समान रूप से महत्वपूर्ण भूमिका होगी।

महानिदेशक, रक्षा अनुसंधान एवं विकास संगठन मुख्यालय तथा भविष्य की रक्षा प्रौद्योगिकियों पर काम करने वाली प्रयोगशालाओं के निदेशक, वरिष्ठ वैज्ञानिक; सामरिक योजनाओं के प्रतिनिधि, आर्मी डिजाइन ब्यूरो, बख्तरबंद कोर, इन्फैंट्री, युद्धपोत डिजाइन ब्यूरो, भारतीय वायु सेना तथा कई रक्षा उद्योगों एवं रक्षा पीएसयू के वरिष्ठ अधिकारी इस कार्यशाला में भाग ले रहे हैं।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1907166>

# ThePrint

Thu, 16 Mar 2023

## CDS Inaugurates Two-day DRDO Workshop

Chief of Defence Staff General Anil Chauhan on Wednesday inaugurated a two-day workshop on 'Human Factors Engineering in Military Platforms' in New Delhi, stated an official release.

The workshop has been organised by the Defence Institute of Physiology and Allied Sciences (DIPAS), a Delhi-based laboratory of the Defence Research and Development Organisation (DRDO).

The aim of the workshop is to evolve a policy framework and practices to ensure scientific implementation of Human Factors Engineering (HFE) in the defence sector, thereby providing an impetus to the vision of 'Aatmanirbhar Bharat'.

The HFE is a science concerned with the design of tools and systems by taking into account human capabilities and limitations for safe and effective use.

In his address, the Chief of Defence Staff emphasised the need for incorporation of the HFE right at the stage of qualitative requirements and designs to make indigenous weapons suitable for soldiers.

He called for creating a synergistic approach and policy framework for the implementation of the HFE through the involvement of Integrated Defence Staff, taking into consideration both long-drawn battles and short-duration special operations.

Speaking on the occasion, secretary, Department of Defence R&D and chairman, DRDO, Dr Samir V Kamat, highlighted the initiatives taken by DRDO for implementation of the HFE as an integral part of the product development cycle to ensure that the products are developed not only for Indian soldiers but are also available for export.

He emphasised that in the age of Artificial Intelligence and system autonomy for defence equipment, the HFE will play an equally important role.

Director generals, Directors from DRDO Headquarters and laboratories working on futuristic defence technologies, senior scientists, representatives from Strategic Planning, Army Design Bureau, Armoured Corps, Infantry, Warship Design Bureau, Indian Air Force and senior officials of several defence industries and defence PSUs are attending the workshop.

<https://theprint.in/india/cds-inaugurates-two-day-drdo-workshop/1447169/>

## The Statesman

*Wed, 15 Mar 2023*

### **CDS for Human Factors Engineering in Making Indigenous Weapons**

Chief of Defence Staff Gen Anil Chauhan on Wednesday called for the incorporation of Human Factors Engineering (HFE) in the defence sector right at the stage of qualitative requirements and designs to make indigenous weapons suitable for soldiers.

He was inaugurating a two-day workshop on 'Human Factors Engineering in Military Platforms' in New Delhi. The workshop has been organised by the Defence Institute of Physiology and Allied Sciences (DIPAS), a Delhi-based laboratory of the Defence Research and Development Organisation (DRDO).

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Gen Chauhan called for creating a synergistic approach and policy framework for the implementation of the HFE through the involvement of Integrated Defence Staff taking into consideration both long-drawn battles and short-duration special operations.



DRDO workshop [Photo: PIB]

Speaking on the occasion, Secretary Department of Defence R&D and Chairman DRDO Samir V Kamat highlighted the initiatives taken by DRDO for implementation of the HFE as an integral part of the product development cycle to ensure that the products were developed not only for Indian soldiers but were also available for export. He emphasised that in the age of Artificial Intelligence and system autonomy for defence equipment, the HFE would play an important role.

<https://www.thestatesman.com/india/cds-for-human-factors-engineering-in-making-indigenous-weapons-1503162692.html>

## DRDO on Twitter



**DRDO** ✓  
@DRDO\_India



#DRDOUpdates | DIPAS is organising two day workshop on 'Human Factors Engineering in Military Platforms' at DRDO Bhawan during 15-16 March. General Anil Chauhan, CDS inaugurated the workshop in presence of Secretary DDR&D and Chairman DRDO today

@DefenceMinIndia  
@SpokespersonMoD



4:09 PM · Mar 15, 2023 · 10.2K Views



## Defence News

### Defence Strategic : National/International



Press Information Bureau  
Government of India

Ministry of Defence

*Thu, 16 Mar 2023*

### **Exercise Sea Dragon 23**

A P8 aircraft of the Indian Navy arrived at Guam, USA on 14 Mar 23 to participate in 'Exercise Sea Dragon 23', the third edition of the coordinated multi-lateral ASW exercise for Long Range MR ASW aircraft, conducted by the US Navy.

The exercise scheduled from 15-30 Mar 23, would stress on coordinated anti-submarine warfare amongst the participating countries. The complexity and scope of these exercises has increased steadily over the past years to include advanced ASW drills.

Ex Sea Dragon 23 will test the capabilities of participating aircraft in tracking simulated and live underwater targets, whilst also sharing mutual expertise. The Exercise would witness representation by an Indian Navy P8I, along with P8A of the US Navy, P1 from the Japanese Maritime Self Defence Force, CP 140 from the Royal Canadian Air Force and P3C from the RoKN. The Exercise aims to achieve high levels of synergy and coordination between the friendly navies, which is based on their shared values and commitment to an open, inclusive Indo-Pacific.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1907414>



Press Information Bureau  
Government of India

Ministry of Defence

*Wed, 15 Mar 2023*

### **Indian Coast Guard Region (North East) Organises 4th Table Top Exercise in Kolkata under Colombo Security Conclave to Discuss Maritime Challenges in Indian Ocean Region**

Indian Coast Guard Region (North East) is conducting the fourth edition of Table top exercise under the aegis of Colombo Security Conclave in Kolkata from March 14 to 16, 2023. Apart

from the Indian Coast Guard, representatives of member nations of Colombo Security Conclave - Sri Lanka, the Maldives and Mauritius – along with observer countries - Bangladesh and Seychelles - are participating in the exercise. Discussions are being held on topics pertaining to challenges in maritime domain such as tackling threats from anti-national elements, marine pollution response, search & rescue and damage control at sea.

The Colombo Security Conclave was formed in 2011 as a trilateral maritime security grouping of India, Sri Lanka and the Maldives. The roadmap of activities was later expanded, with Mauritius joining as the fourth member and Bangladesh & Seychelles participating as observer countries. The Conclave underlines regional cooperation and shared security objectives concerning all littoral nations in the Indian Ocean Region (IOR). It aims to make maritime security, marine pollution response and maritime search & rescue priorities for the region.

Coordination amongst maritime neighbours holds the key for maritime safety and security in the IOR. Prime Minister Shri Narendra Modi's vision of Security and Growth for All in the Region (SAGAR) and neighbourhood first policy are the prime initiatives for IOR and bears testimony to India's policy priorities. A cooperative environment and collaborative mechanism in the maritime neighbourhood of IOR is essential to address the oceanic challenges, thereby ensuring maritime safety, security and protection of marine environment.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1907141>



*Wed, 15 Mar 2023*

## **Defence Ministry Moves Bill to Strengthen Tri-services Commanders Powers**

Amid its move to create theatre commands, the Defence Ministry on Wednesday moved a bill in Parliament to give disciplinary powers to heads of tri-services organisations over all the personnel from three forces working under them. The bill is known as the "Inter-Services Organisations (Command, Control and Discipline) Bill, 2023".

The bill states that the central government may "by notification, constitute an Inter-services Organisation, which may include a Joint Services Command, comprising of units or service personnel who are subject to any of the Service Acts, as may be placed under the command of the Commander-in-Chief or, as the case may be, the Officer-in-Command".

The bill has been moved at a time in Parliament when the Defence Ministry is working on the creation of theatre commands to tackle threats and the post of Chief of Defence Staff has been created to work in this direction.

The bill is to "empower the Commander-in-Chief or the Officer-in-Command of Inter-services Organisations in respect of service personnel who are subject to the Air Force Act, 1950, the Army Act, 1950 and the Navy Act, 1957, who are serving under or attached to his command, for

the maintenance of discipline and proper discharge of their duties, and for matters connected therewith or incidental thereto".

The bill also states the Commander-in-Chief or, as the case may be, Officer-in-Command of an Inter-services Organisation, shall be the head of such Inter-services Organisation and shall exercise command and control over the personnel serving in or attached to that Inter-services Organisation, for the purpose of maintenance of discipline and proper discharge of their duties.

CDS Gen Anil Chauhan has been briefing top brass of the government on the work being done in the direction of improving jointness and increasing integration among the forces as directed by the prime minister. He has been working with the three services chiefs to create operational tri-services organisations or theatre commands to strengthen the forces to fight future battles.

<https://www.indiatoday.in/india/story/defence-ministry-moves-bill-to-strengthen-tri-services-commanders-powers-2347139-2023-03-15>



*Thu, 16 Mar 2023*

## **Indian Navy Announces Instituting Two Trophies in Memory of Gen. Bipin Rawat**

The Indian Navy has announced instituting two awards in memory of India's first Chief of Defence Staff Gen. Bipin Rawat.

The Navy made the announcement on the eve of the late General's 65th birth anniversary on Thursday. The first trophy would be Gen. Bipin Rawat's rolling trophy for the 'Women Agniveer Trainee standing first in overall order of merit'.

Indian Navy spokesperson Commander Vivek Madhwal on Wednesday said the trophy for the current year will be presented by Chief of the Naval Staff Admiral R. Hari Kumar during the 'Passing Out Parade' of the first batch of Navy Agniveers on March 28 at the Navy's premier sailors training centre INS Chilka.

The second award would be Gen. Bipin Rawat's rolling trophy for the 'Most Spirited Officer' undergoing the Naval higher command course at Naval War College (NWC) in Goa, he said.

Gen. Rawat, his wife Madhulika Rawat, and 12 other military personnel were killed in a helicopter crash near Coonoor in Tamil Nadu on December 8, 2021.

"On the occasion of his 65th birth anniversary on March 16, the Indian Navy fondly remembers Late Gen. Bipin Rawat, the first Chief of Defence Staff of Indian Armed Forces," the Navy said in a statement.

It described Gen. Rawat as a "visionary" leader and a "military reformer" and said he was known for his professionalism, principles, conviction, and decisiveness. "In a distinguished career spanning over four decades, Gen. Rawat's achievements were remarkable in all spheres of military and national security affairs," the Navy said. It said India's first Chief of Defence Staff, Gen. Rawat, rallied for organizational and structural reforms to integrate the armed forces. "Path-

breaking transformational initiatives and civil-military synergy will remain his legacy. General Rawat's enthusiasm led the Armed Forces to turn Agnipath—the biggest transformation by the armed forces since Independence, from an idea to reality," the Navy said in a statement.

<https://www.thehindu.com/news/national/indian-navy-announces-instituting-two-trophies-in-memory-of-gen-bipin-rawat/article66625573.ece>

## THE TIMES OF INDIA

*Thu, 16 Mar 2023*

### **Navy's Elite Gunnery School to get President's Award Today**

Battles have been fought on water for ages but the essence of naval warfare lies in the success of gunnery, which is all about delivering ordnance on target – be it from a ship, a submarine, an aircraft, or a coastal battery. For India, mastery in gunnery is synonymous with INS Dronacharya, the Indian Navy's Centre of Excellence in Gunnery and Missile Warfare under the Southern Naval Command in Kochi that is responsible for training personnel in small arms, missiles and artillery, radar and defensive countermeasures.

In recognition of INS Dronacharya's glorious service, President of India Droupadi Murmu will award it the prestigious President's Colour, considered the highest honour that the Supreme Commander bestows on a military unit, on Thursday.

The achievement coincides with the diamond jubilee (75 years) of the Indian Navy's Gunnery School that was established in 1948 and became INS Dronacharya in 1978.

"The award of President's Colour is in recognition of the yeoman's service rendered by INS Dronacharya in training sea warriors for accurate delivery of ordnance on target in keeping with their motto 'Kuru Praharam Prathame'," said Vice Admiral MA Hampiholi, flag officer commanding-in-chief, Southern Naval Command.

Heroic Pedigree Gunners trained at the premier establishment, which is the sole naval gunnery school in the country, have played stellar roles in many of the naval operations since Independence, including Operation Trident (missile attacks on Karachi during the 1971 Indo-Pak war) and Operation Cactus (rescue of hostages taken by mercenaries who had attempted a coup in The Maldives in 1988).

The first time independent India's naval ships fired on the enemy was in Operation Vijay that liberated Goa from the Portuguese in 1961. "Just like Guru Dronacharya trained Arjuna to focus on the sole eye of the bird, my alma mater taught me the most important life-lesson: 'one mind, one round, one target' for victory and in everything that you do," said Admiral R Hari Kumar, Chief of the Naval Staff, who is a gunnery specialist.

Admiral Madhvendra Singh, former chief of the naval staff, said capturing Anjadip Island, a stronghold of the Portuguese army 3km south of the main Portuguese garrison, on December 18, 1961, was an important part of Op Vijay, which witnessed gunnery excellence.

Singh, who was a young midshipman onboard INS Mysore, the flagship cruiser of the Indian Navy that was part of the operation, still remembers the ferocity of the naval landing party's

amphibious operation. “The gunnery school in Kochi was tasked at a short notice of two weeks to train them in landfighting, camouflage, close combat and gunfight for the specific mission.

They reached Mumbai from Kochi and INS Mysore and Trishul took them to the Anjadip coast. At dawn we launched the landing party consisting of two platoons led by Lt Arun Auditto and N Kelman in small boats,” Singh said. But the assault was repulsed by the Portuguese defenders, who unleashed machine gun fire at the boats from the hill, riddling the naval boats with holes.

In the following full-fledged gun and grenade battle spanning several hours, seven gunners were martyred and nearly 18 others injured. However, the Portuguese defences were eventually overrun as the Indian ships INS Mysore and Trishul resorted to heavy shelling.

“The heavy guns of Mysore wreaked havoc along the island’s coast and even trees were uprooted due to the impact. Within 15 minutes of shelling, the Portuguese surrendered and the landing party took control.

It was the gunners who won the battle and captured the island. In the meantime, the gunners of INS Betwa and Beas forced Portuguese frigate Afonso de Albuquerque to surrender using their gun power at Goa. It was an inspiration for me to later specialise in gunnery,” Madhvendra Singh said.

### **State-Of-The-Art Training**

“Training at Dronacharya is centred on the time-tested concept of ‘drill to skill’. Every trainee is provided with hands-on experience on all weapon systems used by the force. Live equipment – from 7mm pistol to 76mm artillery guns and from Barak surfaceto-air missile to hypersonic Brahmos – is used to provide practical experience.

We have highfidelity simulators, and emulators are used to replicate live systems of various ships and the real-time feel of various situations or environments that they may encounter in the real world. There is no institution in the Indian Ocean region with comparable facilities for practical gunnery and missile training,” said Commodore V Z Job, commanding officer of INS Dronacharya.

The unit ops room has facilities to train officers to handle fleet air defence and surface action in a near-real-time training environment. There are several virtual reality simulators like those of IGLA surface-to-air shoulder-launched missile and the 76mm super rapid gun mount, which is the standard fit onboard most ships of the navy today. “ Dronacharya evolved with the rapid changes in gunnery.

From the days of cannons and heavy guns, now we have long-range, intelligent and hypersonic missiles and extended-range shells. Earlier it was line-of-sight firing but now there is no need to see the enemy and you can fire over the horizon, thanks to advanced sensors and longrange missiles and guns,” said Vice Admiral Madanjit Singh, former chief of Southern Naval Command, who is a gunnery specialist.

<https://timesofindia.indiatimes.com/city/kochi/navys-elite-gunnery-school-to-get-presidents-award-today/articleshow/98685903.cms>

## India-Russia Defence Firm Eyes \$200 Mln Missile Deal with Indonesia

India-based defence company BrahMos Aerospace expects to close a deal this year to sell Indonesia supersonic cruise missiles worth at least \$200 million, as it looks to expand its presence in Southeast Asia, its chief executive said on Wednesday.

BrahMos, a joint venture between India and Russia, clinched its first foreign deal last year with a \$375 million sale of shore-based anti-ship missiles to the Philippines - part of Indian Prime Minister Narendra Modi's ambitious push to triple defence exports.

The company has been in protracted negotiations with Indonesia and details about the size and timeline of a potential deal have not been previously reported.

BrahMos Aerospace CEO Atul D. Rane said that it was in advanced discussions with Jakarta on a deal worth \$200 million to \$350 million under which it had offered to supply shore-based missiles and a version that can be mounted on warships.

"I have a team right now in Jakarta," Rane told Reuters in an interview, adding that a deal could be in place within the year. "The defence forces of Indonesia are extremely interested."

A spokesperson for Indonesian Defence Minister Prabowo Subianto on Wednesday declined to give immediate comment and said he needed to first check the information.

BrahMos is also aiming to land a follow-on order of around \$300 million with the Philippines, where its missiles are scheduled to be delivered to the Philippine Marine Corps starting at the end of 2023, Rane said.

"The Philippines themselves have sort of indicated to us that this is just an ice breaker," Rane said, referring to the 2022 sale. "They are looking at more systems."

A spokesperson for the Philippine Department of National Defence did not immediately respond to a request for comment.

### DEFENCE SPENDING

In response to a growing Chinese maritime presence in the South China Sea and some surrounding areas, Indonesia and the Philippines have ramped up their spending on the procurement of weapons and other military equipment, according to data from defence intelligence company Janes.

Indonesia's investment in the acquisition of new weapons grew by nearly 28% in 2021 and 69% in 2022, while the Philippines saw a rise of 29% in 2021 and 40% in 2022 - far higher than the average in Southeast Asia, the data shows.

"Territorial disputes with China have been a major concern for most of the Southeast Asian countries which is driving their defence budget to meet their security requirements," said Akash Pratim Debbarma, an aerospace and defence analyst at GlobalData.

Much of Southeast Asia's new military purchases come from traditional suppliers, including the United States, France and Russia, but India - the world's largest defence importer - and BrahMos are trying to make inroads.

"We have got the go-ahead to market to every country in southeast Asia from both the government of India and the government of Russia," said Rane.

BrahMos was established through an inter-governmental agreement in 1998 as a joint venture between India's state-run Defence Research and Development Organisation and NPO Mashinostroyeniya of Russia.

Western-led sanctions against Russia for its invasion of Ukraine have not impacted BrahMos production or planning, said Rane.

Although BrahMos missiles still depend on Russian parts and raw material, Rane said the percentage of local input had gone up to over 70% from around 15% at the start of the venture.

<https://economictimes.indiatimes.com/news/defence/india-russia-defence-firm-eyes-200-mln-missile-deal-with-indonesia/articleshow/98672379.cms?from=mdr>

## Business Standard

*Wed, 15 Mar 2023*

### **Defence Start-up Hyper Stealth Technologies Bags First Order Under iDEX**

Given its arsenal of about 5,000 tanks, 3,000 infantry combat vehicles, 4,000 artillery guns and rocket launchers, and over 12,000 trucks, the Indian Army is one of the world's biggest customers for Integrated Mobile Camouflage System (IMCS) solutions to hide all these vehicles.

The first inroad into this billion-dollar market has been made by an Indian defence start-up, Hyper Stealth Technologies Private Limited (HSTPL). The firm announced on Wednesday that it has bagged an order for IMCS, becoming the first winner of the defence ministry's Innovations for Defence Excellence (iDEX) programme to receive an order from the Indian armed forces.

The company, which specialises in manufacturing stealth management solutions, had earlier bagged the iDEX start-up challenge award for "adaptive stealth coating solutions".

Along with artificial intelligence (AI), quantum computing and machine learning, stealth technologies are regarded as the battle-winning element in futuristic battlefields.

The technology that HSTPL is offering for incorporation in new products is estimated to reduce the detection range of modern sensors (infrared, thermal and radar) by 50 per cent. The additional protection offered to armed forces platforms and service personnel greatly increase chances of survival.

The same technology can be used in all three services: For Indian Air Force (IAF) aircraft, unmanned aerial vehicles (UAVs) and aircraft shelters; stealth warships and submarine periscopes for the Navy; and tanks, armoured vehicles, artillery guns, rocket launchers and bunkers, etc. for the Army. "We are extremely honoured to receive the first order in the history of iDEX. Following our Prime Minister's dream of "Atamanirbhar Bharat", we offer a 100 per

cent indigenously designed, developed and manufactured (IDDM) Made in India stealth solution for our armed forces,” said Manish Dalmmia, co-founder of HSTPL.

“To beat the challenge of being detected through sensors, Hyper Stealth worked on the development, design and manufacture of stealth solutions to protect our armed forces from a multitude of threats and challenges in the modern war scenario.” “Unseen is unbeaten — you can’t hit something you can’t see,” he added.

HSTPL was founded in 2016 with its headquarters in New Delhi. Besides manufacturing multi-spectral camouflage nets and tents, its product portfolio includes adaptive thermal signature management paints, radar and infrared camouflaging paint. HSTPL’s fundamental aim is to achieve “perfect signature management”, so that our own force’s assets are unidentifiable by all modern surveillance and identification systems.

[https://www.business-standard.com/article/companies/defence-start-up-hyper-stealth-technologies-bags-first-order-under-index-123031501141\\_1.html](https://www.business-standard.com/article/companies/defence-start-up-hyper-stealth-technologies-bags-first-order-under-index-123031501141_1.html)



*Wed, 15 Mar 2023*

## **Why India continues to be the World's Top Importer of Weapons**

*By Maroof Raza*

India continues to retain the dubious reputation of being the world’s biggest arms importer since 1993, as per the latest report from SIPRI (the Stockholm International Peace Research Institute, in Sweden). This raises the question: ‘what has come out of India’s desire to achieve self-sufficiency in production of defence equipment?’ The answer lies in understanding the multiple issues that are related to the subject, such as India’s threats from neighbours like China and Pakistan, the historical legacy of arms imports from Russia and the diplomatic pressures on India from the arms lobbies in the US. But before we look at these factors, we would also need to admit that India’s inability to develop a robust defence-industrial base can be attributed to the Ministry of Defence still patronising the DRDO, defence PSUs, and ordnance factories and limiting the role of private sector involvement.

According to the research by SIPRI and other bodies, India's percentage of the world's imports was the greatest in the past five years at 11%, followed by Saudi Arabia (9.6%), Qatar (6.4%), Australia (4.7%), and China (4.7%). And, Russia, France, the US and Israel were the main exporters of weapons and allied equipment to India, with Russia still accounting for 45% of the total arms imports by India in 2018-22, even though it has slid down from its earlier tally at over 65% in the previous five years. And France has jumped past the US, which was happily at the 2nd position, with the Rafale deal worth Rs 59,000 crore, that led to a major hike of 44% in French defence exports in before 2022.

No wonder the US was peeved with that deal and is trying hard to get a deal to provide fighter jets for the Navy’s aircraft carrier(s). But what the US aviation companies are unable to comprehend is that India’s defence establishment is wary of US fighters, as Pakistan continues to



use F-16s, and in a future conflict, this familiarity with US tech, could give Pakistan insights into what India could do with US made fighters if India buys the F series jets (like F-18 or F-21). Moreover, Pakistan's military has deep ties in the US, which would be detrimental to India's interests. Let us not forget why the US chose to go with UK and Australia (AUKUS) for its nuclear submarine programme, without India, because India uses Russian submarines even now. It will take decades and billions of dollars for India to wean itself away from the use of Russian military equipment, just as India has stood firm against US led western pressures to abandon Russian energy supplies.

However, the fact that the Modi government has set a \$5 billion dollar export target for defence related equipment — has caused concern in the West (namely US, France, Israel in UK) on whether India will eventually stop importing arms from abroad, more so, as this year only 15% of the money allocated in the budget, has been for buying 'big ticket weapons' and less for defence related platforms to be made in India for now, as everything our armed forces need, cannot be made in India in the near future. Even the much trumpeted indigenously manufactured aircraft carrier still has over 30% of its parts and components manufactured abroad.

Moreover, as India's armed forces have to be prepared for two full-fledged wars (conventionally against China and Pakistan) and two half wars (one in the high seas as part of QUAD and another with insurgencies within), it leaves the Indian establishment with no choice but to keep importing systems — like the \$5.4 billion worth S-400 air defence platforms — at least when a 'critical' need arises, as it did after the Chinese intrusions in Ladakh in 2020. But the painfully long process of defence acquisitions in India, does test the patience of arms sellers. New Delhi on its part is smart enough to use these 'carrots' as a diplomatic bargaining chips to extract geopolitical leverages.

But the push for manufacturing more and more has led to a wide range of measures to boost self-reliance, that includes a separate budget to buy locally made military hardware. Thus this year, around ₹1 lakh crore was set aside for domestic procurement in this year's defence budget, compared to ₹84,598 crore, ₹70,221 crore and ₹51,000 crore in the three previous years, it's still a long way off, from what India needs to spend for local purchases and more importantly R&D. For speedily implementing the idea of 'Atmanirbhar Bharat', more money had to be made available to support 'made in India' initiatives. And India's armed forces must be the first buyers of the made in India platform, because a captive market in India, gives the potential buyers abroad greater confidence in Indian products.

<https://www.timesnownews.com/opinion/why-india-continues-to-be-the-worlds-top-importer-of-weapons-article-98653495>



*Thu, 16 Mar 2023*

## **India Invites Pakistan Defence Minister for SCO Meet**

India has invited Pakistan Defence Minister Khawaja Asif for a Shanghai Cooperation Organisation (SCO) meeting here in April alongside his counterparts from other member-nations of the grouping. India is the current chair of the eight-nation SCO, and the invite to Asif came after New Delhi invited Pakistan's Foreign Minister, Bilawal Bhutto Zardari, for an SCO foreign

ministerial conclave, to be held in Goa in May. India has invited China's Foreign Minister Qin Gang for the conclave. Pakistan is yet to confirm whether the two ministers will attend the meetings.

Besides India, Pakistan and China, the other SCO member-countries are Russia, the Kyrgyz Republic, Kazakhstan, Tajikistan, and Uzbekistan.

If Asif attends the meeting in person, this will be a rare instance when a Pakistan Defence minister visits India. Military historian Mandeep Bajwa recalled that the last such meeting took place when Pakistan's then President Zulfikar Ali Bhutto visited India and, together with then Prime Minister Indira Gandhi, signed the Simla Agreement in July 1972. Bhutto at the time held multiple portfolios, including Defence and Foreign Affairs.

"Other than that, there has been no such opportunity earlier for a Pakistan Defence minister to visit India, as he has little say in military affairs of Pakistan," Bajwa said. "For the same reason, a political heavyweight usually never holds the Defence portfolio in Pakistan."

The last Pakistan Foreign minister to visit India was Hina Rabbani Khar in 2011.

The invitation to the Pakistan Defence minister was sent through the Indian High Commission in Islamabad. India will separately invite Pakistan Prime Minister Shehbaz Sharif, China's President Xi Jinping and Russia's President Vladimir Putin for the annual SCO summit later this year. It is learnt that Defence Minister Rajnath Singh will chair the meeting.

Issues related to terrorism, regional security and the security situation in Afghanistan are among topics expected to feature in the meeting.

Former Pakistan PM Nawaz Sharif had visited India to attend Prime Minister Narendra Modi's swearing-in ceremony in May 2014. Subsequently, then External Affairs minister Sushma Swaraj had visited Pakistan, followed by a brief visit by Prime Minister Modi.

Ties between the two neighbours started going downhill after the Pulwama terror attack in February 2019. In response, Indian Air Force aircraft went deep inside Pakistan territory to destroy militant training camps in Balakot. In August that year, the ending of the special status of Jammu and Kashmir and its bifurcation into two Union Territories added to the strain in ties. Despite sporadic instances of cross-border terrorism, peace has largely prevailed along the LoC after the two armies announced a ceasefire in February 2021.

<https://indianexpress.com/article/india/india-invites-pakistan-defence-minister-for-sco-meet-8499537/>



*Wed, 15 Mar 2023*

## **How India Developing a Naval Base at Andamans Chokes China in the Region**

*By Abhinav Singh*

For years the strategically important archipelago of Andaman and Nicobar Islands (ANIs) situated at the juncture of the Bay of Bengal and Andaman Sea to India's southeast remained a

dormant landmass. That changed when China started making radical movements near the border areas. Fast forward to 2023 and New Delhi is in the advanced stage of building a naval base to counter its perennial foe.

Comprising 572 Islands stretching over an area of 450 nautical miles with a total of 24 ports, ANIs assume great significance in New Delhi's Indian Ocean Region (IOR) strategy. Additionally, it helps India counter China's 'String of Pearls' strategy due to its closeness to the 'Strait of Malacca' chokehold.

### **Manning the Strait of Malacca chokehold**

The northernmost point of the island chain is merely 22 nautical miles from Myanmar, while the southernmost point is only 90 nautical miles away from Indonesia. Nearly 70,000 out of the 1,20,000 ships sailing through the Indian Ocean pass through the 'Strait of Malacca' and the neighbouring Six Degrees channel located to the south of the ANIs.

This strait is the heartbeat of China's operation as 80 per cent of its oil supplies pass through the strait. Militarising the region appears a no-brainer - not because India wants a conflict but to assert an aura of superiority.

In case of an escalating conflict, New Delhi can simply alienate the region. Consequently, China's hydrocarbon supply from the Middle East may come to a screeching halt. Long story short, controlling ANIs essentially means controlling China's economy.

The Politburo in Beijing has previously attempted to use Sri Lanka, Pakistan, the Maldives and the Strait of Hormuz to pin India into a corner. However, New Delhi has managed to thwart some of the pressure using clever manoeuvring.

To neutralise China's grip over the Gwadar port in Pakistan, New Delhi sealed the Chahbahar port in Iran which acts as a counterbalance presence in the region. The port simultaneously allows India to monitor the Strait of Hormuz- the busiest sea route for transporting oil in the world.

After Sri Lanka submitted Hambantota port to China, India managed to win some of the favour by helping the island nation through its worst economic crisis. As for the Maldives, the two countries have signed the Greater Male Connectivity project which has brought them much closer than ever.

### **Developing the islands militarily**

The Andaman and Nicobar Command (ANC) is the first and only tri-service theatre command of the Indian Armed Forces which suggests its significance. The Narendra Modi government of India has also assessed its ace-in-the-hole in the form of ANIs.

Currently, seven Air Force and Navy bases are operating in the region. In 2019, a year after PM Modi first visited the island, an exclusive Rs 5,650 military infrastructure development plan was passed.

The naval air stations INS Kohassa in Shibpur and INS Baaz in Campbell Bay are having their runways extended. Once the runways are operational, the Indian Navy will be able to operate its P-8I maritime surveillance and reconnaissance aircraft.

Upon full execution, the investment will help India in the stationing of infantry soldiers, missile batteries, additional warships as well as drones in the Andamans.

### **New Delhi needs to be wary**

Even if India militarises Andaman island, it will have to remain circumspect due to the Chinese eye in its neighbourhood. The Great Coco Island and Little Coco Island - geographically a part of the Andaman group of islands is right in the middle of an important waterway passage through which China ventures into the Malacca Strait.

Owing to a few blunders by India's former prime minister Jawaharlal Nehru, the ownership of islands went to Burma, modern-day Myanmar and currently, it is China that holds control over it. According to reports, China has used the base to spy on DRDO's missile programmes.

Beijing understands it is operating from a position of weakness in the region. However, it also knows that it has a wild card in the Coco islands.

### **Developing the Greater Nicobar islands**

Apart from utilising the archipelago for geopolitical gains, the government is developing it under the 'Holistic Development of Great Nicobar Islands in Andaman and Nicobar Islands' project. The project conceived by India's premier think tank NITI Aayog seeks to build an International Container Transshipment Terminal (ICTT), a greenfield international airport, a township and a 450-MVA gas and power plant.

Developing the island militarily is an idea that has been mooted previously on numerous occasions. However, most establishments remained lethargic and refrained from taking a proactive approach. If used wisely, the ANIs hold the ability to bind the Indo-Pacific and assimilate the Quad to counter China in the South China sea as well.

<https://www.wionews.com/opinions-blogs/explained-how-india-developing-a-naval-base-at-andamans-chokes-china-in-the-region-572362>



*Thu, 16 Mar 2023*

## **India, AUKUS Explore Disruptive Tech Cooperation in Defence Sector**

According to those with knowledge of the situation, India and the AUKUS cooperation of Australia, the UK, and the US are having informal exploratory discussions about cutting-edge technologies including artificial intelligence, electronic warfare, and cyber technology, Livemint reported.

AUKUS is a tri-nation military alliance that was launched in 2021 with the goal of containing China, which is renowned for its cooperation on nuclear-powered submarines.

Given New Delhi's excellent scientific research and development capabilities, the AUKUS nations are eager to collaborate with India on emerging technologies, according to the individuals mentioned above who spoke on the condition of anonymity.

Although the Indian government has shown some early interest, there has been no formal communication. Two pillars support the AUKUS relationship, which focuses on sharing and co-

developing essential defence and emerging technologies. The first is intended to transmit to Australia highly classified nuclear submarine technology from the US and UK. The other is concerned with cutting-edge capabilities such as developing defence technology, artificial intelligence, and quantum computing.

The exploratory discussions with India have centred on the second pillar partnership between AUKUS and India.

Although without taking a formal stance on the AUKUS collaboration, New Delhi voted against a Russian and Chinese move to sabotage it at the International Atomic Energy Association last year.

China and Russia made an effort to persuade the world that giving Australia access to nuclear technology as part of Pillar 1 would be against the terms of the nuclear non-proliferation pact.

The assistance from India in thwarting this attempt may have also made it possible to work with AUKUS.

Recently, US President Joe Biden, Australian Prime Minister Anthony Albanese, and British Prime Minister Rishi Sunak together unveiled a comprehensive, multi-stage strategy to support Australia's acquisition and operation of extremely important nuclear-powered submarines.

To learn how to operate nuclear-powered submarines, Australian defence personnel will soon start to embed in US and UK defence establishments. But, Australia won't start getting nuclear-powered submarines until the early 2030s, and its first locally made nuclear-powered submarines won't start appearing until the early 2040s.

The plan is anticipated to improve the military prowess of the US and its allies in thwarting China's Indo-Pacific ambitions.

With the association's reputation as a formidable obstacle to Chinese military ambitions in the Indo-Pacific, formal cooperation with AUKUS in the future may be an important symbolic step for Indian foreign policy.

<https://www.timesnownews.com/india/india-aucus-explore-disruptive-tech-cooperation-in-defence-sector-article-98680362>



*Thu, 16 Mar 2023*

## **Sharp Divides: On the Implications of the AUKUS Trilateral Defence Pact**

***Editorial***

The joint appearance by the leaders of the United States, the United Kingdom and Australia, at the Naval Base Point Loma, U.S., this week, and their detailing about their “AUKUS” trilateral defence pact are significant in optics and substance, suggesting a new chapter in the global great power rivalry. There will be three phases in the agreement in the Indo-Pacific region, first announced in September 2021. Beginning this year, the U.S. and the U.K. navies will embed

Australian personnel, and increase port visits to Australia to train together. In the second phase, U.S. and U.K. nuclear submarines will travel rotationally to Australia, and the U.S. will sell Australia up to five nuclear-powered Virginia-class submarines. Subsequently, a new submarine called the SSN-AUKUS, will be built and used by all three navies, with interoperable workings. The deal, the biggest for Australia, using British design and U.S. technology, is expected to cost \$368 billion. It is not hard to imagine who the target of such an alliance is. In his speech, U.K. leader Rishi Sunak said that the most recent challenges to the world have come from “Russia’s illegal invasion of Ukraine, China’s growing assertiveness [and] the destabilising behaviour of Iran and North Korea”. The new alliance is seen as a counter to China exerting its claims on Taiwan, with the idea that a naval fleet including nuclear-powered submarines based in Australia would be able to reach the South China Sea quickly.

Predictably, Beijing’s opposition has been the toughest — a “wrong and dangerous path” — while Russia has raised questions over nuclear proliferation, as Australia would join a group of countries that use nuclear-powered submarines. While U.S. President Joe Biden insisted the submarines would be nuclear-powered, but not nuclear-armed, Russia and China are expected to raise concerns over any violation of the Non Proliferation Treaty regime, at a meet between Chinese President Xi Jinping and Russian President Vladimir Putin in Moscow. New Zealand, Malaysia and Indonesia have indicated more muted discomfort. India has not reacted yet, in part due to the fact that the AUKUS countries have no doubt kept New Delhi briefed. For New Delhi, which has always seemed hesitant to explore more strategic and defence aspects in the Quad, AUKUS gives it a breather in the Indo-Pacific military calculus. India, as a voice for the global south, must do what it can to ensure that the announcement does not exacerbate already sharp divides between U.S.-led alliances and the Russia-China combine, and proves to be a deterrent rather than accelerating global conflict instead.

<https://www.thehindu.com/opinion/editorial/sharp-divides-on-the-implications-of-the-aukus-trilateral-defence-pact/article66622862.ece>



*Thu, 16 Mar 2023*

## **China-backed Shia-Sunni Detente, AUKUS will Impact India's Indo-Pacific Strategy**

*By Shishir Gupta*

The China-backed Saudi Arabia-Iran detente and its expanding strategic levers in Islamic World with ports in Iran, Oman, UAE, Pakistan and Sri Lanka is designed to choke India in its own Indian Ocean backyard with New Delhi facing a possible action from Beijing over its close relations with its QUAD partners, two of which are in the AUKUS alliance, on its northern land frontiers.

In a span of three days this month, two seemingly mutually exclusive announcements with global impact took place that have strategic significance for India and its future relationship with China.

On March 10, China brokered a détente between Sunni Saudi Arabia and Shia Iran which has serious ramifications on who will control the levers of the Islamic World.

On March 13, the US, the UK, and Australia announced the AUKUS deal aimed at countering the rapidly expanding Chinese military challenge in the Indo-Pacific with US made Virginia class nuclear powered conventionally armed submarines or SSNs that have the Chinese mainland in their crosshairs while staying outside the range of Beijing's "ship killer" and "Guam killer" intermediate range ballistic missiles. As per the AUKUS pact, US Virginia class and UK Astute class SSNs will patrol the western coast of Australia to keep the PLA Navy and its expansive plans in Solomon Islands at bay.

India lies at the intersection of these two seemingly diverse events with serious military implications as it is at the center of the Indo-Pacific. The origin of the China brokered Saudi Arabia and Iran détente goes back to Chinese President Xi Jinping's visit to Riyadh in December 2022 when he met leaders of 21 Arab League countries, with the support of Saudi Crown Prince Mohammed bin Salman. Among those who attended the China-Arab summit were the Presidents of Egypt, Tunisia, Djibouti, Comoros and Mauritania, the Prime Ministers of Iraq, Morocco, Algeria, and Lebanon, the Kings of Jordan and Bahrain, the ruler of Fujairah, UAE, the Emir of Qatar, the crown prince of Kuwait, the Secretary General of Arab League and heads of international organizations.

While Iran was not represented, the foundations for Saudi-Iran détente was laid during that visit and bore fruition within three months as Beijing has ties with all the players of the Islamic World including Turkey, Saudi Arabia, Iran and the Central Asian Republics, and, of course, its client state Pakistan. With China already having a naval base in Djibouti on the East African seaboard, a military post in Tajikistan, and financial or strategic interests in Hambantota port in Sri Lanka, Gwadar port in Pakistan Chah Bahar port in Iran, Khalifa port in UAE, and Duqm port in Oman, Beijing's strategic footprint will grow in the Indian Ocean much to the chagrin of India. The rapidly expanding Chinese Navy with three aircraft carriers will try and dominate the Indian Ocean with the help of the Sunni and Shia shoulders of Islam and in many ways control the levers of the Islamic World and its hydrocarbon power. Though the previous UPA regime thought little of a Chinese string of pearls strategy that could choke India, the fact is that if this transpires, China will have the capacity to constrict and restrict India in its own region. It is only logical that India with its powerful navy will expand its footprint to Southeast Asia and South China Sea to counter the Chinese challenge while keeping its traditional ties with Saudi Arabia, Iran and UAE intact.

Although the AUKUS alliance will not have a negative bearing on India, New Delhi's association with QUAD powers and naval exercises under the rubric of Malabar (to be held off the coast of Sydney this August) will make the Chinese response towards India more pointed. Both China and its ally Russia have criticized both the QUAD and AUKUS alliances given that their cities on the eastern seaboard from Shanghai and Vladivostok could be the target of submarine launched ballistic missiles from AUKUS submarines located safely beyond the first island chain east of the two countries.

Even though India practices strategic autonomy, its association with QUAD and AUKUS will invite stares from both China and Russia. While Russia may not act against India due to past and present ties, China may use QUAD as an excuse to mount pressure on India all along the Line of Actual Control and on the US and Japan by precipitating a Taiwan crisis. The upside of AUKUS is that China will be deterred by powerful navies in the Indo-Pacific and also be forced to treat India at par unless it wants New Delhi to permanently shift to the other side with an actionable QUAD on the ground rather than just a talk shop.

With China militarily growing in cyber- and sea- domains, India will have to closely monitor Beijing under President Xi as the latter historically or in the present times has not yielded an inch. Prime Minister Narendra Modi will have to not only be prepared for hybrid war but also have to chose friends carefully for coming challenges.

<https://www.hindustantimes.com/india-news/beyond-the-news-aukus-project-middle-east-pact-and-their-ripples-101678903780489-amp.html>



*Wed, 15 Mar 2023*

## **China, Russia, Iran Hold Joint Naval Drills in Gulf of Oman**

Naval forces from China, Iran and Russia — countries at odds with the U.S. — are staging joint drills in the Gulf of Oman this week, China's Defence Ministry said Tuesday.

Other countries are also taking part in the “Security Bond-2023” exercises, the ministry said without giving details. Iran, Pakistan, Oman and the United Arab Emirates all have coastline along the waterbody lying at the mouth of the strategic Persian Gulf.

“This exercise will help deepen practical cooperation between the participating countries' navies ... and inject positive energy into regional peace and stability,” the ministry statement said.

U.S. National Security Council spokesperson John Kirby said Wednesday that the White House was not concerned by the joint training exercise.

Mr. Kirby said the U.S. and other nations conduct training exercises all the time and this won't be the first time that the Russians and Chinese have trained together.

“We're going to watch it, we'll monitor it, obviously, to make sure that there's no threat resulting from this training exercise to our national security interests or those of our allies and partners in the region,” Mr. Kirby said on CNN.

“But nations train. We do it all the time. We'll watch it as best we can.”

The exercises scheduled for Wednesday through Sunday come amid heightened tensions between the U.S. and China over a range of issues, including China's refusal to criticise Moscow over its invasion of Ukraine and continuing support for the Russian economy.

The U.S. and its allies have condemned the invasion, imposed punishing economic sanctions on Russia and supplied Ukraine with defensive arms. Iran and the U.S. have been adversaries since the founding of the Islamic Republic in 1979 and the taking of U.S. diplomats as hostages.

China has dispatched the guided missile destroyer Nanning to take part in the drills centered on search and rescue at sea and other non-combat missions.

China maintains its only foreign military base, complete with a navy pier, in the Horn of Africa country of Djibouti, located just across the Gulf of Oman.

The three countries held similar drills last year and in 2019, underscoring China's growing military and political links with nations that have been largely shunned by the U.S. and its partners.



Last week, China hosted talks between Iran and its chief Middle Eastern rival Saudi Arabia that resulted in an agreement between them Friday to restore full diplomatic relations after seven years of tensions.

While the U.S. and Saudi Arabia have long-standing military and political ties, relations have frayed over the 2018 killing of U.S.-based journalist Jamal Khashoggi, a critic of the kingdom's leadership, and cuts in production by the OPEC+ oil cartel that the administration said was helping Russia.

China's hosting of the Iran-Saudi talks placed it in the unusual role of mediator in regional conflicts, one that Beijing appears to be keen to capitalise on under the rubric of President Xi Jinping's "Global Security Initiative."

The country's Special Envoy for the Horn of Africa Affairs Xue Bing on Tuesday "further affirmed China's readiness to work with countries in the region to contribute to peaceful regional development and build a closer China-Africa community with a shared future by implementing the outlook," the official Xinhua News Agency quoted him as saying on a visit to Ethiopia.

China opposes "geopolitical competition by external forces (and) has no intention to and will not seek to fill the so-called vacuum or put up exclusive blocs," Xue was quoted as saying.

<https://www.thehindu.com/news/international/china-russia-iran-hold-joint-naval-drills-in-gulf-of-oman/article66622345.ece>



*Wed, 15 Mar 2023*

## **China, India and the Promise of the Power of Two Premium**

*By Ma Jia (Chargé d'affaires ad interim, Embassy of the People's Republic of China, in India)*

The year 2023 marks a high point in India's diplomacy, with its presidentship of the Shanghai Cooperation Organisation (SCO) and the G-20. The focus is also on China which held "two sessions" recently: the annual sessions of the National People's Congress of the People's Republic of China and the National Committee of the Chinese People's Political Consultative Conference. Here are some insights into China's development.

China is advancing modernisation on all fronts. Here, the path to modernisation is based on China's practices with a focus on high-quality development. It means the modernisation of a huge population, where there is common prosperity for all, material and cultural-ethical advancement, harmony between humanity and nature, and peaceful development. This will spell new opportunities to all countries in the world, especially neighbouring countries.

As two neighbouring and ancient civilisations, with a combined population of 2.8 billion, China and India are representatives of developing countries and emerging economies. India and China are both in the process of national rejuvenation and a crucial period of modernisation where challenges need to be overcome and problems need to be solved. China and India have far more common interests than differences.

## **China's focus areas**

The development of China in recent years can be summarised in four points.

The first is “steady growth”. In 2022, China’s economy grew by 3% with a total of 12.06 million urban jobs added. China’s GDP increased to 121 trillion yuan (approximately \$18 trillion), registering an annual growth rate of 5.2% over the past five years and an annual growth of 6.2% over the past decade with GDP increasing by nearly 70 trillion yuan. China’s economic strength is steadily reaching new heights.

The second is “people’s well-being”. As a result of continued efforts of the past eight years, China has historically resolved absolute poverty, with the alleviation of close to 100 million rural residents from poverty. Over 70% of the government’s expenditure went toward ensuring people’s well-being. Basic old age insurance covers 1.05 billion people, an increase of 140 million. Living standards continue to witness new improvements.

The third is “opening up”. In 2022, China’s total volume of trade in goods exceeded 40 trillion yuan, registering an annual growth rate of 8.6%. China’s actual use of foreign capital was up by 8% and the country remained one of the top destinations for foreign investors. The overall tariff level continues to fall, from 9.8% to 7.4%. China’s doors to the outside world are opening even wider.

The fourth is “win-win cooperation”. In the period 2013-2021, China’s contribution to global economic growth averaged 38.6%, higher than that of G7 countries combined (25.7%). Ever since the Chinese President, Xi Jinping, proposed the Global Development Initiative (GDI) in a speech at the United Nations General Assembly in 2021, more than 100 countries have expressed their support and over 60 countries have joined the Group of Friends of the GDI.

## **On trade**

China and India are important trading partners, with bilateral trade volume reaching \$135.984 billion in 2022. Though there is a trade deficit, India’s import of equipment and materials from China does reduce the overall cost of “Made-in-India” products, benefits Indian downstream industries and consumers, enhances the competitiveness of Indian exports, and in turn facilitates India’s integration into global industrial and supply chains.

The Chinese market is open to India, and the Chinese side is happy to see more high-quality Indian goods, cultural and other products entering the Chinese market. Investments by Chinese enterprises have created a large number of jobs for the Indian people and contributed to India’s economic development. We hope that the Indian side could provide a fair, just and non-discriminatory business environment for Chinese companies with their investment and operations in India.

## **Facilitating an ‘Asian Century’**

In his recent meeting with India’s External Affairs Minister S. Jaishankar, Chinese Foreign Minister Qin Gang said that the development and revitalisation of China and India embody a boost to the force of developing countries; it is one that will change the destiny of a third of the world’s population and having bearing on the future of Asia and beyond. This echoes what Mr. Jaishankar had expressed in 2022 — that the Asian Century will happen when China and India come together.

China is willing to strengthen communication and coordination with India, be a partner on the path to modernisation, safeguard the respective legitimate rights and the common interests of developing countries, and make contributions to peace and stability in the region and beyond.

<https://www.thehindu.com/opinion/op-ed/china-india-and-the-promise-of-the-power-of-two/article66623695.ece>

## Outlook

*Thu, 16 Mar 2023*

### **Black Sea Drone Row: US Defence Secretary Lloyd Austin Holds Talk to Russian Counterpart**

Amid the spiralling controversy over an alleged collision between an American surveillance drone and a Russian warplane over Black Sea, US Defense Secretary Lloyd Austin spoke to his Russian counterpart on Wednesday about incident which brought the two countries closest to direct conflict since Moscow's invasion of Ukraine a year ago.

It was the first call between Austin and Defense Minister Sergei Shoigu since October. And Gen. Mark Milley, chairman of the Joint Chiefs of Staff, had a similar call with his Russian counterpart, Gen. Valery Gerasimov, the chief of the General Staff of the Russian armed forces.

"We take any potential for escalation very seriously. And that's why I believe it's important to keep the lines of communication open," Austin said at a Pentagon press briefing. "I think it's really key that we're able to pick up the phone and engage each other. And I think that that will help to prevent miscalculation going forward."

The U.S. military said it ditched the Air Force MQ-9 Reaper in the sea after a Russian fighter jet poured fuel on the surveillance drone and then struck its propeller while it was flying in international airspace. Russia has denied that it caused the accident. The U.S. has said it was working on declassifying surveillance footage from the drone that would show Tuesday's crash.

#### **US-Russia feud**

Russia and the United States ratcheted up their confrontational rhetoric Wednesday over a US surveillance drone that encountered Russian warplanes and crashed near Ukraine's Crimean Peninsula, which the Kremlin has illegally annexed. At the same time, both countries pledged to try to avoid escalation.

The Kremlin said the incident proved again that Washington is directly involved in the fighting and added that Moscow would try to recover the drone's wreckage from the Black Sea. U.S. officials said the incident showed Russia's aggressive and risky behavior and pledged to continue their surveillance.

Russia has long voiced concern about U.S. surveillance flights near its borders, but Tuesday's incident signaled Moscow's increasing readiness to raise the ante as tensions soar between the two nuclear powers. It reflected the Kremlin's appetite for brinkmanship that could further destabilize the situation and lead to more direct confrontations.

#### **All about the fighter jet-drone collision over Black Sea**

A Russian fighter jet on Tuesday struck the propeller of a US surveillance drone over the Black Sea, causing American forces to bring down the unmanned aerial vehicle in international waters, the US military said, an incident that highlighted soaring US-Russian tensions over Moscow's war in Ukraine.

White House National Security spokesman John Kirby said US President Joe Biden was briefed on the incident by national security adviser Jake Sullivan. Kirby added that US State Department officials would be speaking directly with their Russian counterparts and “expressing our concerns over this unsafe and unprofessional intercept.”

Tuesday's incident appeared to mark the first time since the height of the Cold War that a US aircraft was brought down after being hit by a Russian warplane.

The US European Command said in a statement that two Russian Su-27 fighter jets “conducted an unsafe and unprofessional intercept” of a U.S. MQ-9 drone that was operating within international airspace over the Black Sea.

It said one of the Russian fighters “struck the propeller of the MQ-9, causing U.S. forces to have to bring the MQ-9 down in international waters.” Prior to that, the Su-27s dumped fuel on and flew in front of the MQ-9 several times before the collision in “a reckless, environmentally unsound and unprofessional manner,” the US European Command said in a statement from Stuttgart, Germany

“This incident demonstrates a lack of competence in addition to being unsafe and unprofessional,” it added.

US Air Force Gen. James B Hecker, commander of US Air Forces Europe and Air Forces Africa, said that the MQ-9 aircraft was “conducting routine operations in international airspace when it was intercepted and hit by a Russian aircraft, resulting in a crash and complete loss of the MQ-9.” He added that “in fact, this unsafe and unprofessional act by the Russians nearly caused both aircraft to crash.”

There was no immediate reaction from Moscow, which has repeatedly voiced concern about U.S. intelligence flights close to the Crimean Peninsula, which Russia illegally annexed from Ukraine in 2014. The Kremlin has charged that by providing weapons to Ukraine and sharing intelligence information with Kyiv, the US and its allies have effectively become engaged in the conflict.

Kirby emphasized that the incident wouldn't deter the U.S. from continuing their missions in the area. “if the message is that they want to deter or dissuade us from flying, and operating in international airspace, over the Black Sea, then that message will fail,” Kirby said, adding “that is not going to happen.”

“We're going to continue to fly and operate in international airspace over international waters,” he said. “The Black Sea belongs to no one nation.”

The U.S. European Command noted that Tuesday's incident followed a pattern of dangerous actions by Russian pilots while interacting with U.S. and Allied aircraft over international airspace, including over the Black Sea.

“These aggressive actions by Russian aircrew are dangerous and could lead to miscalculation and unintended escalation,” it warned. Gen. David Berger, commandant of the Marine Corps, said that this type of collision is his greatest concern, both in that area of Europe as well as in the Pacific.

“Probably my biggest worry both there and in the Pacific is an aggressive Russia or China pilot or vessel captain, or something gets too close, doesn't realize where they are, and causes a collision,” Berger said, in response to a question at a National Press Club event on Tuesday.

He said that whether an incident is intentional or not, it forces nation's leaders to try and sort it out quickly from afar.

<https://www.outlookindia.com/international/black-sea-drone-row-us-defence-secretary-lloyd-austin-holds-talk-to-russian-counterpart--news-270426>

## Science & Technology News



*Wed, 15 Mar 2023*

### **CSIR Labs can Develop Materials for Space Programme: S. Unnikrishnan Nair**

The laboratories of the Council of Scientific and Industrial Research (CSIR) can play an important role in providing cost-effective, indigenous materials for space missions and related projects of the Indian Space Research Organisation (ISRO), S. Unnikrishnan Nair, Director, Vikram Sarabhai Space Centre (VSSC), said on Wednesday.

Dr. Unnikrishnan Nair was addressing a thematic session on ‘Strategic and Regional Materials’ held as part of the ‘One Week One Lab’ (OWOL) programme at the National Institute for Interdisciplinary Science and Technology (NIIST), Pappanamcode.

Noting the inadvisability of depending too much on imports, he said ISRO requires many special materials such as titanium alloy, Haynes 25 alloy and C-103 (Cobalt-based alloy for engine parts) and that the space agency is still facing shortage of certain materials like good quality titanium sponge.

ISRO can have collaborations with NIIST with a focus on strategies aimed at self-reliance, he said. The space agency has invested in more than 12 industries with over ₹500 crore for manufacturing indigenised materials and products.

A facility for low thermal expansion glass ceramics has been set up at International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad. ISRO has also held discussions with CSIR labs for manufacturing space-quality optical glass, Dr. Unnikrishnan Nair said.

Speaking at a session on ‘Regional Materials,’ experts underscored the need for India and Kerala to capitalise on the soaring demand for ‘green’ technologies to push rubber and coir-based products. Coir Board chairman D. Kuppuramu said that the use of rubber and coir can help reduce the dependence on plastic. However, value addition still played second fiddle to raw material exports, he said.

Sawar Dhanania, Chairman, Rubber Board, said there is a huge potential for the rubberised-coir industry. Rubber and coir should collaborate to survive, especially when Kerala has a downward trend in both, he said. “We have a lot of opportunities in rubber and coir, independently and jointly,” Dr. Dhanania said.

Speakers at the session stressed the need for strategies that ensure a good price for the growers, reduce dependence on imports and stress value-addition. NIIST Director C. Anandharamkrishnan presided over the session.

A session on energy materials and specialty chemicals, titled Urja, was held on Tuesday as part of OWOL. Kerala should focus on converting its rich water resources and availability of sunlight into financial resource by linking them with the industrial and scientific sectors, experts said. Additional Chief Secretary K.R. Jyothilal, who opened the session, said research institutions such as NIIST should focus on developing technologies to manufacture solar panels and the generation and storage of hydrogen.

<https://www.thehindu.com/news/national/kerala/csir-labs-can-develop-materials-for-space-programme-s-unnikrishnan-nair/article66623877.ece>



*Wed, 15 Mar 2023*

## **ISRO Plans ‘Space Tourism’ by 2030 at ₹6 Crore per Passenger**

Come 2030, and Indians who can afford it will be able to don space suits, sit in a module atop a rocket and take a trip to space -- for ₹6 crore.

Senior officials of the Indian Space Research Organisation (Isro) said that work around the government’s space tourism initiative is gaining momentum and India will price the space tickets at “competitive prices” in the global market.

Isro chairman, S Somnath said that the per-ticket cost for a trip to space is likely to be around ₹6 crore—in the range at which other existing global players are placing their space trips currently.

“Work is in progress around India’s very own space tourism module, which is both safe and reusable. The per ticket price is likely to be around ₹6 crores. People who take the trip will also be able to call themselves astronauts,” Somnath said.

While Somnath did not specify whether the space tourism would be sub-orbital (reaching an altitude of 100 km, the edge of space) or orbital (400 km), the cost suggests it will be the former. Typically, on such trips, tourists spend around 15 minutes at the edge of space, experiencing a few minutes in a low gravity environment, before descending. The flights are conducted through reusable rockets, which makes the economics viable for the agencies offering the flight.

Union minister of state (independent charge) science and technology, atomic energy and space, Dr Jitendra Singh said in a written reply to a question in the Rajya Sabha in February that Isro

has already started carrying out feasibility studies for India's sub-orbital space tourism mission on-board a liquid propellant stage booster.

“Through Gaganyaan—India's maiden human spaceflight programme—Isro is engaged in development of various technologies, which are essential building blocks for human space missions,” Singh said.

Space tourism is not new. Aerospace engineer and financial analyst Dennis Tito, was 60 in 2001 when he became the first paying space tourist. He had paid \$20 million to Russia to fly aboard a Soyuz spacecraft and spend a week aboard the International Space Station (ISS). Since then, several companies including Blue Origin, Virgin Galactic and SpaceX, have started offering excursions into space, with tickets on sub-orbital space flights starting from around \$450,000.

Scientists from Isro said that the space tourism project of the government will be planned in partnership with private firms, who will be partnering with the space body via its commercial hand Indian National Space Promotion and Authorisation Centre (IN-SPACe), in developing the module.

The government created IN-SPACe as the single window agency to promote, enable, authorise and supervise non-government entities in space sector in India.

The initial space tourism plan presented by Isro to the government said that the focus will be on developing technologies to ensure a robust escape system, on-demand launch, recovery, re-use, and retro-propulsion landing.

“Along with the Gaganyaan mission, we are also gaining knowledge from our Reusable Launch Vehicle – Technology Demonstrator (RLV-TD), which is one of the most challenging endeavours by Isro. Since we are bringing space experience to the common people, we have to ensure that these trips are extremely safe and our technologies pass safety clearances,” Somnath said.

<https://www.hindustantimes.com/india-news/coming-in-2030-a-trip-to-space-at-6-crore-101678909144670.html>

# ThePrint

*Wed, 15 Mar 2023*

## **16% of Indian Science Researchers are Women, Says Govt, Admits it's 'Much Lower than in Advanced Countries'**

India has a total of 56,747 female researchers which is 16.6 per cent of total researchers in the country, the government told the Rajya Sabha on Wednesday.

There are no plans to enhance incentives and scholarships for them as of now, Minister for Science and Technology Jitendra Singh said in reply to an unstarred question from YSRCP MP Beesetti Venkata Satyavathi.

In reply to a separate question about the uptake of women scientists scheme, Singh said that in 2021-22 and 2022-23, a total of 172 and 199 women scientists were selected out of 490 and 708 candidates, who applied under the Women Scientists Scheme-A (WOS-A).

The WOS-A for research in basic and applied sciences is aimed at bringing back women who earlier dropped out for some reasons, back to the scientific workforce. It provides opportunities to women scientists and technologists in the age group of 27-60 years who want to return to mainstream science and work as bench-level scientists.

In its reply to the question asked by Congress MP Gaurav Gogoi, the state-wise data submitted by the Department of Science and Technology (DST) shows that Punjab (31.82 per cent success rate in 2021-22 and 42.31 per cent in 2022-23, Jammu and Kashmir (33.3 per cent success rate in 2021-22 and 54 per cent in 2022-23) and Telangana (45.71 per cent success rate in 2021-22 and 22 per cent in 2022-23) are some of the better performing states under the programme.

The overall success rate nationally stood at 35 per cent in 2021-22 and 28.11 per cent in 2022-23.

‘Number of female researchers lower’

In his reply to Satyavathi’s question, Singh conceded that the proportion of women in the scientific workforce is lower in India than in advanced countries.

“Government is aware that the number of female researchers in the country is much lower than that in the advanced countries. The government has taken several steps to increase the number of female researchers in the country which includes implementation of women scientist specific schemes of DST to provide opportunities to women scientists and technologists, especially those who had a break in career...,” Singh said.

Among the programmes listed by the government aimed at increasing female participation were the Consolidation of University Research through Innovation and Excellence in Women Universities (CURIE) programme of DST and the Gender Advancement for Transforming Institutions (GATI).

While the CURIE provides support for development of research infrastructure in women’s universities, the GATI aims to transform institutions for a more gender sensitive approach and inclusiveness. The GATI’s ultimate goal is to improve the gender equity in STEMM (Science, Technology Engineering, Mathematics and Medicine).

<https://theprint.in/india/16-of-indian-science-researchers-are-women-says-govt-admits-its-much-lower-than-in-advanced-countries/1444900/>



