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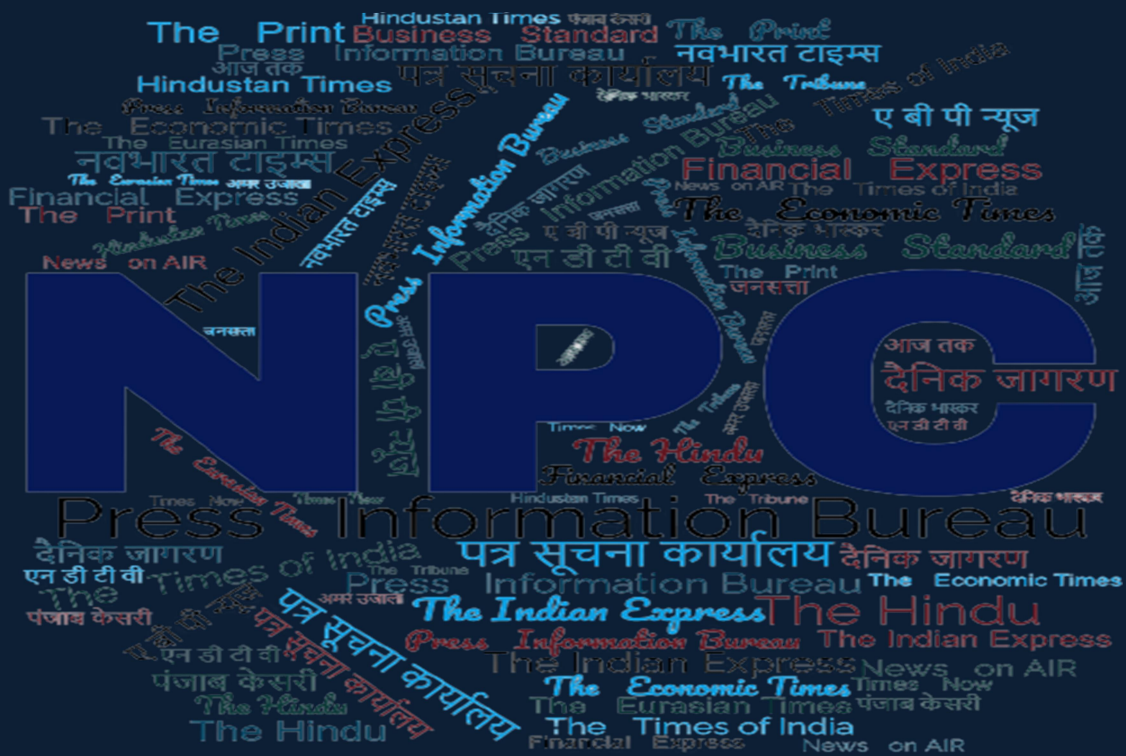
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समाचार पत्रों से चयित अंश Newspapers Clippings

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

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CONTENTS

S. No.	TITLE		Page No.
	DRDO News		1-2
	DRDO Technology News		1-2
1.	मिसाइल हो या बम... 30000 फीट की ऊंचाई से दुश्मन को हक्का-बक्का कर सकता है 'घातक' ड्रोन	नवभारत टाइम्स	1
	Defence News		2-28
	Defence Strategic: National/International		2-28
2.	कलवारी श्रेणी की पांचवीं पनडुब्बी वागीर के परिचालन की शुरुआत 23 जनवरी 2023 को की जायेगी	पत्र सूचना कार्यालय	2
3.	Fifth Kalvari Class Submarine Vagir to be Commissioned on 23 Jan 2023	Press Information Bureau	3
4.	Vagir, Navy's 5th Scorpene-Class Submarine, Tobe Commissioned on January 23	The Indian Express	4
5.	Army Floats RFP for 20 Vehicle-Based Drone Jammers	The Indian Express	4
6.	Is the Mega Military Project to Acquire 114 Fighters for the IAF in Jeopardy?	Financial Express	5
7.	Is India Prepared to Use Robots in Tri-Forces?	Financial Express	7
8.	Will Budget 2023 Speed Up The Momentum For 'Make In India' In Defence?	The Economic Times	9
9.	Defence Budget must be Capability-Driven	The Tribune	11
10.	Tata Boeing Aerospace Delivers First Fuselage for Indian Army AH-64 Apache	India TV	13
11.	Women officers in command soon	The Hindu	14
12.	Women in Indian Army Set to Climb Career Ladder with Command Roles for 108 Officers	Hindustan Times	14
13.	Industry Leaders Share Predictions for Union Defence Budget 2023	Financial Express	16
14.	India-Armenia Relation in the Changing Regional and International Geopolitics	Financial Express	18
15.	Defence Group Report Shows Pakistan as Low on Priority-List, Outlines India's Middle-Ground Policy	The Print	19
16.	Regulus Launches New C-UAS Solution that Neutralises Swarms	Janes	20
17.	British Army to Get New Reconnaissance UASs	Janes	21
18.	New German Defence Minister Boris Pistorius Says He will Strengthen Army, Help Ukraine	The Economic Times	22
19.	UK to Send 600 Brimstone Missiles to Help Ukraine: Defence Minister	The Economic Times	23
20.	North Korea Sustains High Defense Spending with New Budget	The Week	23
21.	Hundreds More Canada-Made Armoured Vehicles to Arrive in Ukraine by Summer	Reuters	24
22.	Germany could Decide in 'Next Hours' on Ukraine Tank Supply	The Hindu	25
23.	महिलाओं को सेना में शामिल करेगा ताइवान:मिलिट्री ट्रेनिंग देगा, चीन की ओर से हमले का खतरा बढ़ता देख बनाई गई योजना	दैनिक भास्कर	26
24.	NATO Military Leadership Addresses New Era Of Collective Defence	NATO OTAN	27
	Science & Technology News		28-29
25.	"Vigyanika — Science Literature Festival" Event in IISF, Bhopal	Press Information Bureau	28

नवभारत टाइम्स

Thu, 19 Jan 2023

मिसाइल हो या बम... 30000 फीट की ऊंचाई से दुश्मन को हक्का-बक्का कर सकता है 'घातक' ड्रोन

दुनिया जैसे-जैसे आगे बढ़ रही है, युद्ध का तरीका बदल रहा है। अब भारी-भरकम टैंक और जम्बो फाइटर जेट्स का नहीं, छोटे मगर विस्फोटक हथियारों का जमाना है। अनमैन्ड कॉम्बैड एयर वीइकल (UCAV) यानी लड़ाकू ड्रोन ऐसा ही एक हथियार है। भारत के पास जल्द ही 'घातक' जैसा स्टील्थ ड्रोन होगा। भारतीय वायुसेना (IAF) के लिए डिफेंस रिसर्च एंड डिवेलपमेंट ऑर्गनाइजेशन (DRDO) इसे डिवेलप कर रहा है। DRDO घातक ड्रोन में मिसाइल, बम व अन्य गाइडेड हथियार रखने की जगह होगी। इसमें टर्बोफैन इंजन लगा है जो इसे 30,000 फीट की ऊंचाई तक ले जा सकता है। घातक UCAV का टेक्नोलॉजी डिमॉन्स्ट्रेटर SWiFT UAV काफी कुछ अमेरिकी B-2 स्टील्थ बॉम्बर से मिलता-जुलता है। इसका वजन करीब एक टन है। 'अपना देश अपने हथियार' सीरीज में आज बात DRDO के 'घातक' ड्रोन की।

DRDO घातक अपना निशाना खुद ढूंढ लेता है

भारत में ड्रोन कार्यक्रम की शुरुआत 2009 से हुई। तब AURA यानी ऑटोनॉमस अनमैन्ड रिसर्च एयरक्राफ्ट प्रोग्राम शुरू किया गया। प्रोजेक्ट घातक उसी से निकला है। इसका मकसद लड़ाई में इस्तेमाल होने वाले ड्रोन तैयार करना है। 'घातक' ड्रोन 'फ्लाईंग विंग' डिजाइन पर आधारित है। यानी यह एयरक्राफ्ट अपने ज्यादा ज्यादा ईंधन और हथियार ले जा सकता है।

'घातक' ड्रोन तेज रफ्तार में अच्छा-खासा पेलोड कैरी कर सकता है। यह अपने टारगेट्स को ऑटोमेटिकली निशाना बना सकता है। इसमें इलेक्ट्रो-ऑप्टिकल सेंसर्स और AESA रडार लगा है। यह देखने में चगगादड़ जैसा लगता है। 'घातक' के स्केल्ड डाउन टेस्टबेड की पहली फ्लाइट पिछले साल जुलाई में हुई थी। इसका फुल स्केल प्रोटोटाइप 2025 तक तैयार हो सकता है।

ड्रोन कार्यक्रम के तहत, भारत रुस्तम-2 नाम का एक UAV पहले से ही बना रहा है। रुस्तम-2 को लगातार 18 घंटे तक उड़ाया जा सकता है। यह 30,000 फीट की ऊंचाई तक जा सकता है।

SWiFT में लगा है रूसी इंजन

DRDO ने जुलाई 2022 में SWiFT (Stealth Wing Flying Testbed) UAV का टेस्ट किया था। यह UCAV के टेक्नोलॉजी डिमॉन्स्ट्रेटर के रूप में विकसित किया गया है। SWiFT और अमेरिकी B-2 बॉम्बर एक जैसे नजर आते हैं। करीब एक टन वजनी SWiFT में रूस में बना एक छोटा टर्बोफैन इंजन लगा है।

भारत को ऐसे जेट-पावर्ड ड्रोन से सुरक्षा पंक्ति को मजबूत बनाने में खासी मदद मिलेगी। ये मौजूदा ड्रोन से कहीं ज्यादा तेज रफ्तार से उड़ते हैं और ज्यादा हथियार ले जा सकते हैं। इनमें ऐडवांस्ड सेंसर्स लगे हैं। 'घातक' जैसे UCAV का इस्तेमाल ऐंटी-एयरक्राफ्ट गन्स और जमीन से हवा में मार करने वाली मिसाइलों से घिरे दुश्मन के इलाके में हमले करने के लिए किया जा सकता है।

<https://navbharattimes.indiatimes.com/india/drdo-ghatak-drone-ucav-for-indian-air-force-read-about-stealth-wing-flying-testbed-swift/articleshow/97117311.cms?story=2>

DefenceNews

Defence Strategic : National/International



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 19 Jan 2023

कलवारी श्रेणी की पांचवीं पनडुब्बी वागीर के परिचालन की शुरुआत 23 जनवरी 2023 को की जायेगी

भारतीय नौसेना 23 जनवरी 2023 को कलवारी श्रेणी की पांचवीं पनडुब्बी वागीर के परिचालन की शुरुआत (कमीशन) करेगी, नौसेनाध्यक्ष एडमिरल आर हरि कुमार समारोह के मुख्य अतिथि होंगे। भारत में इन पनडुब्बियों का निर्माण; मझगांव डॉक शिपबिल्डर्स लिमिटेड (एमडीएल) मुंबई द्वारा मैसर्स नेवल ग्रुप, फ्रांस के सहयोग से किया जा रहा है। कलवारी श्रेणी की चार पनडुब्बियों को पहले ही भारतीय नौसेना में शामिल किया जा चुका है।

गौरवशाली अतीत और स्थापना

पूर्व के वागीर को 01 नवंबर 1973 को कमीशन किया गया था और इसने निवारक गश्त सहित कई परिचालन मिशन संचालित किये। लगभग तीन दशकों तक देश की सेवा करने के बाद 07 जनवरी 2001 को पनडुब्बी का सेवामुक्त किया गया। 12 नवंबर 20 को अपने नए अवतार में लॉन्च की गई 'वागीर' पनडुब्बी को अब तक की सभी स्वदेशी निर्मित पनडुब्बियों में सबसे कम निर्माण समय में पूरा होने का गौरव प्राप्त है। समुद्री परीक्षणों की शुरुआत करते हुए इसने 22 फरवरी को अपनी पहली समुद्री यात्रा की और कमीशन से पहले यह व्यापक स्वीकृति जांच तथा सख्त व चुनौती वाले समुद्री परीक्षणों की एक श्रृंखला से गुजरी। मैसर्स एमडीएल ने 20 दिसंबर 22 को इस पनडुब्बी को भारतीय नौसेना के सुपुर्द किया।

वगीर – फेरोसिएस फिफ्थ

वागीर भारत के समुद्री हितों को आगे बढ़ाने के लिए भारतीय नौसेना की क्षमता को बढ़ाएगी और यह सतह-रोधी युद्ध, पनडुब्बी-रोधी युद्ध, खुफिया जानकारी एकत्र करना, माइन बिछाने तथा निगरानी मिशन सहित विभिन्न मिशनों को पूरा करने में सक्षम है।

वगीर - सैंड शार्क

सैंड शार्क 'गोपनीयता और निडरता' का प्रतिनिधित्व करती है, दो गुण जो एक पनडुब्बी के प्राथमिक विशेषताओं के पर्याय होते हैं।

भारतीय नौसेना में वागीर को शामिल करना, नौसेना की विनिर्माता के रूप में अपनी स्थिति को मजबूत करने की ओर एक और कदम है, साथ ही यह एक प्रमुख जहाज और पनडुब्बी निर्माण यार्ड के रूप में एमडीएल की क्षमताओं को भी दर्शाती है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1892301>



Press Information Bureau
Government of India

Ministry Of Defence

Thu, 19 Jan 2023

Fifth Kalvari Class Submarine Vagir to be Commissioned on 23 Jan 2023

Indian Navy is set to commission the fifth Kalvari class submarine Vagir on 23 Jan 2023, Adm R Hari Kumar, Chief of the Naval Staff will be the Chief Guest for the ceremony. These submarines are being built in India by the Mazagon Dock Shipbuilders Limited (MDL) Mumbai, under collaboration with M/s Naval Group, France. Four of the Kalvariclass of submarines have already been commissioned into the Indian Navy.

Glorious Past and Inception

The erstwhile Vagir was commissioned on 01 Nov 1973 and undertook numerous operational missions including deterrent patrols. The submarine was decommissioned on 07 Jan 2001 after serving the nation for about three decades. Launched and named 'Vagir' on 12 Nov 20, the submarine in its new avatar has the distinction of having the lowest build time among all indigenously manufactured submarines till date. She undertook her maiden sea sortie in Feb 22, marking the commencement of sea trials and has gone through a series of comprehensive acceptance checks and, stringent and demanding sea trials prior being commissioned. The submarine was delivered to Indian Navy by M/s MDL on 20 Dec 22.

Vagir - Ferocious Fifth

Vagir will boost the Indian Navy's capability to further India's maritime interests and is capable of undertaking diverse missions including anti-surface warfare, anti-submarine warfare, intelligence gathering, mine laying and surveillance missions.

Vagir - Sand Shark

The Sand Shark represents ‘Stealth and Fearlessness’, two qualities that are synonymous with the ethos of a submariner. The induction of Vagir is another step towards the Indian Navy, consolidating its position as a builder’s Navy, as also reflects MDL’s capabilities as a premier ship and submarine building yard.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=18922431>



Fri, 20 Jan 2023

Vagir, Navy’s 5th Scorpene-Class Submarine, Tobe Commissioned on January 23

The Navy is set to commission the fifth of its diesel-electric Scorpene-class submarine — Vagir — next week, the Navy said Thursday. Vagir is among the six submarines being built in India by the Mazagon Dock Shipbuilders Limited (MDL) Mumbai, in collaboration with the French M/s Naval Group under the over Rs23,000 crore Project 75. Four of these Kalvari class submarines have already been commissioned into the Navy, while the sixth and the last one is slated for delivery this year end. Navy Chief Admiral R Hari Kumar will be the chief guest for the ceremony on January 23. Launched on November 12, 2020, Vagir started the sea trials from February 1, 2022.

<https://indianexpress.com/article/india/vagir-navys-5th-scorpene-class-submarine-to-be-commissioned-on-january-23-8392872/>



Thu, 19 Jan 2023

Army Floats RFP for 20 Vehicle-Based Drone Jammers

The Indian Army is looking to purchase vehicle-based drone jammers which are capable of detection and neutralisation of drones/swarms from multiple directions. A request for proposal (RFP) for the jammers was floated by the Army on January 18 with specifications and numbers of such vehicle-based systems that it wants to purchase. At present, the RFP says 20 such vehicle-based jammers are needed. The Defence Research and Development Organisation (DRDO) and Bharat Electronics Limited (BEL) have developed such vehicle-based drone jammers in addition to the technology being developed by private companies.

The RFP states that the drone jammer (vehicle-based) should provide multi-sensor-based (at least two sensors) complete and comprehensive solutions with regard to unmanned aircraft systems (UAS), drones and swarms. “The system should be capable of UAS/drones/SWARMS detection,

tracking, designation & neutralization of swarm/ drones/ UAS approaching simultaneously from multiple directions,” it states.

It further adds that the jammer should integrate all detection sensors and identify threats to provide the operator with composite air situation pictures and facilitate the selection and management of responses for countering UAS/drone, using jammer systems. The jammer should have a radio frequency (RF) detector, 3D radar (Drone Detection Radar), RF and satellite navigation jammer system, and command and control centre (C2 Centre). The jamming of drones is done in a variety of ways. One of the methods is RF jamming, which disrupts the radio frequency link between the drone and its operator by generating large volumes of RF interference. Once the RF link, which can include Wi-Fi links, is severed, a drone will usually either descend to the ground or initiate a ‘return to home’ manoeuvre.

Another method is to disrupt the drone’s satellite link, such as GPS or GLONASS. Drones that lose their satellite link will usually hover in place, land, or return home. Yet another way to tackle the drone threat is by ‘spoofing’. This allows the jammer to take control of or misdirect the targeted drone by feeding it a spurious communications or navigation link. The drones can also be neutralised by ‘dazzling’. This means using a high-intensity light beam or laser to “blind” the camera on a drone. Lasers and high-power microwaves can also be used to destroy the vital parts of a drone, causing it to crash.

<https://indianexpress.com/article/india/army-rfp-vehicle-based-drone-jammers-8391062/lite/>



Thu, 19 Jan 2023

Is the Mega Military Project to Acquire 114 Fighters for the IAF in Jeopardy?

By Manish Kumar Jha

IAF’s mega \$20 billion Multi-Role Fighter Aircraft (MRFA) programme is nowhere in sight. Against the fast-depleting squadron of the Indian Air Force (IAF), the MRFA programme which is about acquiring 114 Multi-Role Fighter Aircraft, is one such programme that the Indian Armed Forces and the Government are treating as important. There are multiple projects underway in India’s aerospace ecosystem. India’s public sector defence undertaking, Hindustan Aeronautics (HAL) along with Aeronautical Development Agency (ADA) is working together to build Advanced Medium Combat Aircraft (AMCA).

Tejas MK2 is another ambitious project which is evolving out of HAL’s Tejas fighter aircraft design. Tejas MK2 is building upon Mark 1A. The improvement is significant in terms of the engine and firepower with multi-role advanced functional capabilities. For Tejas Mk2, the Ministry of Defence has shown a willingness to speed up the process from design to prototype development, boosting its export potential in the global jet market.

LCA Mk2 Project Director at ADA, V MadhusudanaRao outlined the sped-up process: “There is a huge push from the central government on increasing the production rate of aircraft with India

already getting inquiries about the aircraft from 16 countries.” Besides, the Cabinet Committee on Security has already approved the Tejas Mk2 programme at a total cost of around Rs 9,000 crore which might increase during the course of development. More so, there are clusters of other projects underway – some of them at the concept stage to design like the twin-engine deck-based fighter (TEDBF) for the aircraft carrier INS Vikrant, the LCA Naval (LCAN) and the Omni Role Combat Aircraft (ORCA).

While the DRDO and HAL are working on unmanned-based futuristic aerial systems and aircraft which include the Stealth Wing Flying Testbed (SWiFT) and the Combat Air Teaming System (CATS) Warrior. In the plethora of such big-ticket indigenous programmes, the MRFA seems to have lost its proposition after more than two decades of trials and tribulations.

Dragging and delaying MRFA

The IAF first floated the Medium Multi-Role Combat Aircraft (MMRCA) tender to procure 126 new combat jets from foreign OEMs in 2007. Once the MMRCA was scrapped, India managed to fill the void by ordering 36 Rafale aircraft for the IAF. So far, the status remains so. While so many programmes are about taking a leap in India’s manufacturing technology, the focus for IAF remains on the need for next-generation tech-ready combat jets for potential future conflicts. Simply put, the IAF has to fulfil its mandate if such situations arise.

The IAF’s Perspective Plan looks at it in terms of its combat asset which is primarily about the number of fighter jets under the squadron. It is broadly defined as 42 squadrons. At present, IAF has 30 squadrons. Further, the IAF will phase out the remaining four MiG-21 squadrons by 2025, bringing the squadron strength to its lowest. The advancement across the spectrum of aerospace is breaking boundaries in areas like stealth, speed, electronic and sensor suite and networked platforms on quantum combat cloud, teaming with unmanned aerial systems. Can India leverage such a complex web of next-generation technologies through the MRFA?

“No single country is able to achieve the entire gamut of technologies as such,” remarked a former fighter combat pilot, adding “the cost is also overwhelming.” Besides the security dimension, the MRFA project worth \$20 billion makes a compelling case for India in terms of the economy of scale.

Also, the key requirement of the MRFA is that foreign companies partner with local companies to manufacture combat jets, systems, and components as well as their assembly and maintenance/servicing in India. India can also integrate domestically manufactured avionics and weapons systems; many such systems can be interrogated in futuristic AMCA and Tejas Mk2 as well. Last year, Chief of Air Staff (CAS), Air Chief Marshal VR Chaudhari added the element of ‘make in India’ to the MRFA project. He suggested that the MRFA programme must embrace indigenisation.

The competition is intense with world-leading OEMs in the fray for the MRFA, including Lockheed Martin’s F-21, Boeing’s Super Hornet F/A-18 E/F, Dassault’s Rafale, Saab’s Gripen JAS-39 E/F, Russian MiG-35 and SU-35, and the European consortium led Eurofighter Typhoon. The incessant delays are raising concerns about the viability of the MRFA project. Either the programme must take off or the Government must scrap it, experts summed up. For the moment, it is still the status quo.

<https://www.financialexpress.com/defence/is-the-mega-military-project-to-acquire-114-fighters-for-the-iaf-in-jeopardy/2953232/>

Thu, 19 Jan 2023

Is India Prepared to Use Robots in Tri-Forces?

By Huma Siddiqui

The introduction of robotics in military applications has the power to quickly change the direction of any battle and also help to reduce manpower from Tri forces. Robots using artificial intelligence (AI) can effortlessly traverse dangerous terrain, do remote surgery, and carry out risky surveillance missions. Neighbouring country's soldiers conducted an unusual drill using remote-controlled diggers, in an effort to underscore the rising usage of robots in military applications. The German and French defence ministers have also announced their ambitions to construct a new fighter jet nicknamed the "Eurodrone," which is scheduled to take flight in 2040. The US is not the only country making inroads into the field of Robots in Military Applications.

A series of robots with a focus on surveillance and reconnaissance applications has been created by the Defence research and Development Organisation (DRDO). These missions are being used by a robot called RoboSen. Additionally, a miniature man-portable UGV, a wall-climbing flapping-wing robot, as well as a walking robot with four and six legs for logistical assistance are some of the created robots in military applications that are receiving recognition. In the robotics race, India wasn't far behind, but India not that capable to replace manpower because technology advancement still need to be done.

New technologies and Strategy Tri forces are keen to explore?

It's a really intriguing moment when emerging innovations from non-defence industries are also helping the defence industry develop new technology. The world has only previously witnessed technologies being developed in the defence sector, then moving into the civil sector. For the first time, the opposite is also taking place. Modern innovations like Artificial intelligence, 5G, Robotics process automation, Quantum technology, advanced materials, Advanced computing, Semiconductor technology, Hypersonic technology and blockchain are crucial for defence as well. Underwater Domain Awareness technologies, which enable you to have a thorough awareness beneath the sea given the significance of the extent of the sea that we have, are crucial from a defence viewpoint in particular.

It's critical to concentrate on space, which is the new area of our concentration, as well as, of course, all cyber-related technology. The market for military robots is expected to reach US\$24.2 billion by 2025. The next-generation rocket should include variants for the land, air, and sea and will be improved with the newest propulsion technology, navigational systems, and high-grade sensors. It will also be linked to an ISR system that is powered by AI.

Disposable UAVs

Attacks against Aramco oil fields that were carried out at a distance of 1000 kilometres were conducted using inexpensive drones. US soldiers in Iraq have frequently employed Explosively Formed Projectiles (EFPs), which discharge molten copper slugs capable of penetrating armour – something akin to a claymore mine for anti-armour.

AI/ML and Big Data

This is for simplified military operations, improved fighting performance, robotic border surveillance; AR/VR based troop training, Next-gen combat capabilities like IoBT (Internet of Battle Things) and constructing the war cloud to upgrade the defence sector's overall IT infrastructure.

Military robots

The most obvious benefit of using military robots in battle is their ability to accept risks that may result in human losses. Robots are also capable of things that humans are not, such as being awake always, seeing in all directions, and processing information quickly. The majority of the T-72, T-90 tanks, Fighter Jet and Technologies respect to counter next generation terrorisms and War, now in India is outmoded technologically, notably in terms of mobility, protection, and firepower. The improved features are expected to be able to defeat enemy tanks, armoured vehicles, unmanned aerial vehicles (UAV), and destroy or dissuade helicopters. In the military conflict with China, technical disadvantage will persist.

The Joint/Integrated Commands were to be established in order to strengthen jointness. Such commands are being established, which is an important defence reform and Investments in university research to support the discovery of profound scientific and engineering knowledge. In order to create a future force that is digitally superior, India must immediately begin the road of modernising its defence networks and fostering jointness. Support sophisticated use cases for digital defence use cases, defence networks must be unified and modernised. It is understood that the Quantum Lab and Artificial Intelligence (AI) Centre were built but Process, Set-ups and SOPs to solve real time problems of the Indian Tri forces still need to be done.

The Centre for Artificial Intelligence and Robotics (CAIR) – this lab focuses primarily on research and development in the fields of robotics, AI, and information and communication security Set-ups and Implementation to solve real time problems Indian Tri forces still need to do. A cutting-edge project called Energy Harvesting Built Infrared Sensor Network for Automated Human Intrusion Detection, or EYESIRa, has already begun development in India's defence sector. EYESIRa is based in part on IoT principles, but we have to think this kind of development is really going to solve the problem of Tri-Forces, not only testing phase in the field also.

“Around 194 start-ups in the defence technology sector have been identified by India as using cutting-edge technologies to provide innovative new solutions for enhancing national security. As new start-ups targeted at offering AI tools and drones emerge, focused initiatives have been formed in merging AI and robotics for the adoption of technology in India's defence sector. But standardization need to done in term of technology and SOPs because they going to solve problem of Tri-Forces not only testing phase at field also and information security is key thing in it,” explains a senior officer on condition of anonymity. The military affairs revolution, which is developing into a disruption, is now being influenced by a variety of technologies. Because of these technologies and the pandemic effect, we will eventually reach frontiers of conflict and warfare that we haven't even been able to imagine or forecast. Unrestricted Wars/Conflicts and Multi Domain Operations will be driven by disruptive technologies.

Sharing his perspective with Financial Express Online, Dr (Prof) NishakantOjha, Advisor Cyber & Aerospace Securities says: “In my perspective, the additional domains would be Aerospace, Cyber Space, AR/VR based troop training, AI/ML, Nuclear, Information Environment, Robotics process automation, Quantum technology and Electromagnetic Spectrum, in addition to the already-existing Air, Land, and Sea. Conventional or unconventional operations, utilising hard or soft power, state or non-state actors, day or night, in a time of war or peace, might all be carried out.”

Budgetary Constraints

According to DrOjha, “We also need to be aware of the significant budgetary constraints the Indian Armed Forces would face. For conventional purposes, the typical allocation of around 1.5% of the GDP was insufficient. Now, this also needs to include consuming technology. That too during a recession when the GDP is contracting. So, clothing must be tailored appropriately. This confirms the necessity for us to be selective and deliberate in what we do, how we do it, and why. It will be fascinating to observe what models other nations take in this situation.”

Adding, “Long before they had practical commercial uses, the neighbouring countries have historically played a significant role in supporting and fostering cutting-edge technology. The internet, computing, semiconductors, GPS, satellites, nuclear energy, and semiconductors are only a few examples of new technologies that have matured thanks to public funding in early R&D before moving into the private sector.”

<https://www.financialexpress.com/defence/is-india-prepared-to-use-robots-in-tri-forces/2954095/>

THE ECONOMIC TIMES

Thu, 19 Jan 2023

Will Budget 2023 Speed up the Momentum for ‘Make in India’ in Defence?

By Gaurav Mehndiratta

The current government’s vision of placing Indian defence sector on the world map and demonstration of its growing capabilities have attracted attention and raised expectations from India globally. With the current geo-political upheaval, rising inflation and slowing global growth, the government may however have to walk a tight rope to balance its ambition and fiscal pressure as it prepares to present the Union Budget this year. The onus of actualising the government’s vision is twofold – framing appropriate policies funded by adequate budgetary allocations by the government and response by the industry on actual implementation. While several policy reforms have been introduced on the regulatory front, it can prove to be a stimulant only when adequate funding and tax incentives are in order. Considering the same, the expectations from Union Budget 2023 are:

The projected inflation for Financial Year (FY) 22-23 is 6.9%. Additionally, with increased Acceptance of necessity (AoNs) being accorded under the indigenous acquisition categories, the deals would include transfer of technology (ToT), due to which the acquisition costs are expected to go up. The industry is looking towards a meaningful increase in capital budgetary

allocations adjusted against the inflationary pressure and abnormal costs as highlighted above vis-à-vis the 13% y-o-y increase in the last year's budget. For the indigenous production to continue perpetually, self-reliance of the required state-of-the art technologies need to be a key focus area. Being self-reliant would include being able to manufacture complete platforms, expansion of in-house Research & development (R&D) capabilities etc. There is a need of increased budgetary allocations to defence R&D. Additionally, some weighted deductions on the R&D expenditure and tax incentives for industry players to undertake ToT can prove to be the drivers to establish manufacturing ecosystem in India.

Initially, Production Linked Incentive (PLI) Schemes were introduced for 13 sectors with an outlay of INR 1.97 lakh crore (~USD 24.02 Bn) and were subsequently extended to manufacturing of drones and drone components in September 2021. As the PLI scheme incentivises domestic production and can play a major role in developing the Micro, Small, and Medium Enterprises (MSME) ecosystem of the sector, similar schemes should be implemented for manufacturing defence products as well. The lower corporate tax rate of 15%, which is currently available under the direct tax laws for new manufacturing companies, was extended by one year in budget 2022 i.e. till March 2024. Considering that the defence sector is capital intensive, for the industry to be able to reap its benefits, it is expected that the deadline should at least be extended till March 2026. Further, from the defence sector standpoint, set up of maintenance, repair and overhaul (MRO) facilities will also be essential. The government should consider extending the lower corporate tax rate of 15% to companies setting up MRO facilities as well.

Uncertainties due to inordinate delays while seeking defence specific tax exemptions are a concern for taxpayers.. The Finance Act should be amended to add time limits for disposal, while clearly defining the process of obtaining the required approvals in a streamlined manner. Goods and Services Tax (GST) constitutes a major cost to the defence sector. The Government should consider introducing exemptions for import of strategic and critical components for indigenous manufacturing of defence platforms. Such benefits should also be extended to import of locally unavailable raw materials which are indispensable for producing aerospace and defence (A&D) components.

Further, the Government should also consider introducing exemption on import of parts, tools for MRO of defence aircrafts or parts of defence aircrafts. Currently, such exemption is only available to MRO for civil aircrafts. The Government should consider extending the existing time-limit of one year for bringing back the goods to principal under jobwork for A&D sector, considering the requirement of this sector. While this priority sector demands increased budgetary allocations and new tax incentives, the rising burden of fiscal pressures and need for a contingency plan in the year of global turbulence cannot be overlooked. In this scenario, it shall be interesting to witness how the government will manage to keep growth at its centerstage, amidst tightening financial conditions.

https://m.economictimes.com/news/defence/will-budget-2023-speed-up-the-momentum-for-make-in-india-in-defence/amp_articleshow/97122305.cms

The Tribune

Thu, 19 Jan 2023

Defence Budget Must be Capability-Driven

By Pradeep Bal

THE annual budgetary process is well underway and the expected allocation for the nation's security under the defence head is a matter of great interest and greater concern. India has an inimical neighbourhood, both on the western and northern fronts. While the western adversary has been a constant irritant, it does not pose a major threat by itself. The main issue of concern is and will remain China, with whom the unsettled land borders stretch across the Himalayas. The security situation in the neighbourhood, as well as globally, remains unpredictable and volatile. In the past, we have been mostly reactive in dealing with any crisis situation, not only militarily but even the monetary requirements were met in an emergency mode. While there has been a regular annual increase in global defence outlays, especially of the USA and China, the sudden jump in the case of a country like Japan is a stark pointer to the fragile security environment, which majorly factors in our northern adversary.

A clear perception of desired capabilities linked to timelines is essential for meeting the security challenges that confront the nation, in at least a medium time frame of seven to 10 years. It is a well-known truism that building capacities and developing capabilities need time, while intentions can change rapidly. The bottom line for capability development is the fiscal outlay. Infusion of high-end technology in military systems and equipment, which in the present day includes cyber, space and unmanned platforms, is cost-intensive.

However, every year we see only a marginal increase in the defence budget, which is not even adequate to overcome inflation. In fact, it has been decreasing as a proportion of total government expenditure. During the last 10 years, the annual defence budget as a percentage of the GDP has shown a decline, with the ratio for the last year being the lowest since the 1960s. This has been well below the desired levels. The Parliamentary Standing Committee on Defence had recommended that defence expenditure should be 3 per cent of the GDP to ensure adequate preparedness of the armed forces, based on threat perceptions, and developing long-term deterrence capabilities against hostile neighbours.

The allocation for the Ministry of Defence has shown a much lower annual growth as compared to the average growth in overall Central government expenditure of 14 per cent. Since 2011-12, the capital outlay for defence grew at an annual average rate of 7 per cent, while the overall capital expenditure of the Central government grew at 13 per cent. The share of capital outlay for defence in total government capital expenditure decreased from 41 per cent to 23 per cent in this period. The increase in capital outlay for defence over the last two years, which includes expenditure on big-ticket platforms such as tanks, naval vessels and aircraft, as well as a large and varied inventory of smaller systems, equipment and infrastructure, has been around 10 to 12 per cent, while capital expenditure of the Central government has gone up by around 25 to 29 per cent.

It may well be argued that the competing fiscal requirements for national development, which includes a multitude of projects and government initiatives, civilian infrastructure, healthcare and education, among others, may preclude any substantial increase in the defence outlay. While this needs to be appreciated in a developing nation like ours with a burgeoning population living at subsistence levels, it is ironic and distressing that even the reduced allocations for defence are not fully utilised. Budgetary constraints and labyrinthine processes have undoubtedly been a dampener in acquisition of military weapons and equipment. Repeatedly, we see the lapsing of allocated funds at the end of the financial year. The solutions to all this have been highlighted often enough, not only by the armed forces but also by the Parliamentary Standing Committee for Defence.

First and foremost, the defence budget must be capability-driven and not intention-driven! The total annual outlay is always falling short of the projected requirements. To safeguard against slippages due to procedural tardiness in procurements, it is imperative to make the Capital Budget 'non-lapsable' and 'roll-on' in nature, with a three-to-five-year time span. During the recent winter session of Parliament, the Standing Committee on Defence has once again stressed that a 'non-lapsing fund' for military modernisation must be created so that the mid-year need for additional grants and budgetary allocation is avoided.

At present, there is no separate allocation of funds for committed liabilities and new schemes, as both are covered under capital acquisitions, contrary to recommendations made by this committee. Under the present rules of business, allotted funds lapse at the end of the financial year on March 31, hence the pressing need for an amendment in making the capital head of the defence budget 'non-lapsable' and 'roll-on'. This would also enable meeting urgent defence needs during critical situations. The draft Cabinet note for a non-lapsable defence modernisation fund has been under consideration by the government for quite some time now and its approval needs to be accorded expeditiously. The situation demands solutions, not shuffling of papers.

Having had this long experience of underfunding and underutilisation, maybe it is time for a fixed amount to be transferred every year to a defence modernisation fund that can be managed by the RBI or a designated bank. This fund should be drawn upon to make acquisitions in a time-bound manner. A necessary concomitant would be transparent acquisition processes, whether from domestic or foreign sources. Lapsing of capital funds, convoluted procurement processes and red tape, with no accountability, have no place in modern-day governance, least of all in the area of national security. It is time to make a bold move in this Budget.

On February 1, the Finance Minister will present the Union Budget, which will be the last full-year annual financial statement by the present government. It is fervently hoped that due importance will be given to the monetary cost of ensuring national security, not only in terms of enhanced outlay but also by making provisions to obviate non-utilisation of funds. Most importantly, the defence budget should not be viewed as a drain on the national economy. With emphasis on high-quality indigenous defence production, both by private players and efficiently managed defence public sector undertakings and the large dual-use ecosystem that this creates, a major portion of the defence expenditure can well be seen as an engine of economic growth.

<https://www.tribuneindia.com/news/comment/defence-budget-must-be-capability-driven-471881>



Thu, 19 Jan 2023

Tata Boeing Aerospace Delivers First Fuselage for Indian Army AH-64 Apache

“This is a proud milestone and a testimony of our commitment towards Aatmanirbhar Bharat and the world-class manufacturing capabilities at our joint venture Tata Boeing Aerospace Limited at Hyderabad. The Apache will provide the Indian Army with a significant boost in capability just as the AH-64 has for the Indian Air Force,” said SalilGupte, president, Boeing India. Notably, the aircraft company had already completed the deliveries of all 22 AH-64E Apache helicopters to the Indian Air Force in 2020.

TBAL’s 14,000 sq. m. facility in addition to being a global sole source supplier for Apache fuselages, produces complex aero-structures for Boeing 737 and 777 models. The joint venture between Boeing and Tata Advanced Systems Limited (TASL) employs over 900 engineers and technicians and utilizes cutting-edge robotics, automation and advanced aerospace concepts in its manufacturing processes.

“Successful delivery of the first fuselage for Boeing AH-64 Apache combat helicopters for the Indian Army is the result of the hard work and seamless collaboration of the teams at TBAL, India. This delivery also positions TBAL and India as important manufacturing bases in overall Boeing operations. We stay committed towards the progression of indigenous defence manufacturing with a strong focus on quality and timely delivery,” said, Sukaran Singh, managing director and chief executive officer, Tata Advanced Systems Limited (TASL).

Make in India gets a major boost with this project

TBAL has produced and supplied Boeing’s Apache final assembly plant in Mesa, Arizona with over 190 fuselages. More than 90 percent of the parts used in these aerostructures assemblies are manufactured within India through over 100 Micro, Small and Medium Enterprises (MSME) suppliers in support of the government’s vision for Make in India. Tata Group recently won the “Supplier of the year” award 2022 from Boeing, from among more than 11,000 suppliers worldwide. With more than 1,275 AH-64 Apaches in operation accumulating over 4.9 million flight hours globally, 1.3 million of which have been in combat, the attack helicopter holds the reputation of being the world’s most advanced and proven attack helicopter.

<https://www.indiatvnews.com/news/india/tata-boeing-aerospace-delivers-first-fuselage-for-indian-army-ah-64-apache-2023-01-19-840653>

Thu, 19 Jan 2023

Women Officers in Command Soon

According to sources, women officers Special No. 3 Selection Board is being conducted for promotion from the rank of Lieutenant-Colonel to Colonel from January 9 to 22. This flows from the Supreme Court judgment in 2021 upholding an earlier judgement granting permanent commission as well as command postings to women officers in all arms and services other than combat. "A total of 244 women officers are being considered for promotion against 108 vacancies, from 1992 batch to 2006 batch, in various Arms and Services (Engineers, Signals, Army Air Defence, Intelligence Corps, Army Service Corps, Army Ordnance Corps and Electrical & Mechanical Engineers)," an Army source said.

At the culmination of the Selection Board, the 108 women officers who are declared fit will be under consideration to be posted on various command assignments. "The first set of such postings will be issued by end of January 2023," the source said. The vacancies for this Special No. 3 Selection Board were released by the government to promote affected women officers to ensure gender parity in the Army, the source said. Elaborating, the source said a total of 60 affected women officers have been called as observers for the Selection Board to ensure fair conduct and clarify their apprehensions, if any.

Following judicial intervention, the Army granted Permanent Commission (PC) to women officers on a par with their male counterparts. "All women officers granted PC are undergoing special training courses and challenging military assignments to empower them for higher leadership roles in the Army," the source said, adding that PC to women officers in junior batches had also commenced, in which they are considered for PC in their 10th year of service. For the first time, five women officers cleared the Defence Services Staff Course (DSSC) and the Defence Services Technical Staff Course (DSTSC) Exam last year, which is held annually in the month of September. The five women officers will undergo a one-year course and be given adequate weightage while being considered for command appointments, the source added. Army Chief General Manoj Pandey announced last week that the Army would soon induct women officers into the Corps of Artillery.

<https://www.thehindu.com/news/national/army-begins-selection-process-to-grant-command-postings-to-women-officers/article66409090.ece/amp/>

Fri, 20 Jan 2023

Women in Indian Army Set to Climb Career Ladder with Command Roles for 108 Officers

Women officers in the Indian Army are set to climb the career ladder with the force conducting a special selection board to promote 108 of them to the rank of select-grade colonel for the first time in a move aimed at bringing about gender parity, offering them command assignments in

select branches, and giving them new hard-earned identities, officials familiar with the development said on Thursday.

As many as 244 women officers in the rank of lieutenant colonel are being considered by the board for the 108 vacancies, said one of the officials cited above asking not to be named. The selection process began on January 9 and will culminate on January 22. As on Thursday, 66 women officers have been cleared for promotion to colonel, and the remaining vacancies will be filled by the weekend, said a second official, who also asked not to be named.

Among the women officers already approved for the next rank is Lieutenant Colonel Rishma Sarin, wife of a highly decorated fallen soldier, Major Mohit Sharma of 1 Para (Special Forces). Sharma was posthumously awarded the country's highest peace-time gallantry award, the Ashoka Chakra, for his heroism during a counter-terror operation in Kashmir in 2009. Before that, the Special Forces officer had led a string of operations in Kashmir, including one that involved infiltrating the ranks of a terrorist outfit and killing some of its top operators.

Select-grade means the officers are selected for promotion based on merit, rather than on the basis of time spent in service.

The women officers being assessed by the selection board are from the 1992 to 2006 batch and were commissioned in various arms and services including Engineers, Signals, Army Air Defence, Intelligence Corps, Army Service Corps, Army Ordnance Corps, and Electrical and Mechanical Engineers, said the first official. Also, 60 of the women officers being considered for promotion have been called as observers for the selection board to ensure fairness and to clarify their apprehensions if any, the official said.

To be sure, women doctors in the armed forces have risen to the three-star rank (lieutenant general and equivalent in the other two services). Also, six women officers were granted the time-scale rank of colonel by the army last year after completing 26 years of service. These officers are also being considered by the selection board for promotion to the select-grade rank to ensure career progression, HT has learnt.

The 108 women officers who are declared fit will be eligible to hold command assignments, and the first set of such postings will be issued by January-end. "To provide equal opportunities to women, the army has granted Permanent Commission (PC) to women officers on a par with their male counterparts. With this, women officers can aspire to achieve greater glory and shoulder higher ranks and responsibility," the first official added. Women officers who have been granted PC are undergoing special training courses and have also been given challenging assignments to empower them for higher leadership roles, the officials said.

Last week, Army chief General Manoj Pande said the commissioning of women officers in the regiment of artillery was on the cards. He said empowerment of women was a focus area in which the army had made good progress.

In early January, the army for the first time deployed a woman officer, Captain Shiva Chouhan, at Siachen, the world's highest and coldest battleground. It also army deployed its largest contingent of 27 women peacekeepers in Sudan's disputed region of Abyei, where they will provide relief and assistance to women and children, and perform security-related tasks in a challenging mission as part of the United Nations Interim Security Force (UNISFA).

<https://www.hindustantimes.com/india-news/women-in-indian-army-set-to-climb-career-ladder-with-command-roles-for-108-officers-101674153736121.html>

Thu, 19 Jan 2023

Industry Leaders Share Predictions for Union Defence Budget 2023

As the Union Budget is slated to be presented in Parliament on February 1 2023, India's evolving defence industry is taking centre stage. As the countdown begins, industry watchers have highlighted several critical developments in the sector that might factor in this year's budget considerations. The ongoing tensions along the Line of Actual Control (LAC) with China, the raging conflict in Ukraine and volatility in Pakistan, among other vital developments, could influence the Union Defence budget 2023. Financial Express Online spoke to leading analysts from the industry and the services and asked them to share their views on the budget allocations for this year.

"Budget expectations for the Indian Air Force (IAF) are going to be no different this year than last year. The Indian economy is growing at a good pace, and the external threat environment hasn't undergone much change. The government is willing to invest in capability building," explained Air Vice Marshal Nirdosh Tyagi (Retd) when asked what the service is expecting.

Financial Express Online exclusively spoke to the Society of Indian Defence Manufacturers (SIDM), President SP Shukla. Upon being asked how emergency/fast track helps in procurement, the SIDM President explained, "Emergency procurement of defence equipment is undertaken to meet a threat arising; action is immediate and could be off the shelf or within a very short duration of time. It is generally undertaken to address operational situation-based requirements or fill up voids or procure items that have been expended. Typically, this is an extraordinary process where procurement procedures are relatively shortened."

He explained, "On the other hand, Fast Track Procedure is a modified procedure to procure off-the-shelf already in-service equipment. This is to meet any immediate needs to be fulfilled in a short span of time. The fast-track process has been normally used for foreign equipment procurement or for purchasing certain classified equipment. Unlike emergency procurement, financial limits are not generally defined for the fast-track process. Overall fast, track procurement is a shortened procedure that includes limited trials and procurement oversight by a committee. Both these processes are important for our armed forces to acquire a capability in a relatively short span of time."

When asked if he sees recent geopolitical developments impact the upcoming Indian defence budget, Shukla responded saying, "Geopolitics, including threat perception alongside the fiscal health of a nation, are factors that determine the defence budget. Recent global developments have shown that our government's approach over the last few years of Atmanirbharta are steps in the right direction. In our case, the land borders are not as tranquil as we would want them to be. Fortunately, post Covid-19 our economy is on the growth path that is reflected by buoyant GST collections. Given these factors, we can certainly see some increase in the defence budget. Further, it is likely that our government is going to focus on the indigenous development of defence equipment. Given these dynamics and the recent activity in the northern and

northeastern borders, it may be important to increase allocation towards tactical armoured vehicles, infantry combat vehicles and light tanks for supporting the Army.”

Sandeep Shah, Co-Founder and Managing Director at OptimisedElectrotech, shared his take with Financial Express Online: “Amidst a global recession scare, India is poised to grow. We must utilise this opportunity to increase our absolute Defence spending as well as our percentage GDP spending to ensure that we protect the sanctity of our borders against our neighbours who are aggressive strategically and financially. R&D allocation given to the Defence Research and Development Organisation (DRDO) and other research and development entities must also include a budget for procurement from startups that have innovative products. This will encourage the industry to invest further in innovation for Defence.”

Jitender Mittal, Chief Financial Officer at Crown Group Defence, shared an extensive assessment of various aspects of the defence budget. He noted that “Defence and Aerospace is an emerging industry in India following recent policy initiatives for increased private sector participation and thrust on Make in India. The sector looks forward to opportunities in the upcoming Budget 2023-24 to escalate growth in the coming years. In the last five years, the budget allocation of the defence sector has increased by 46%. With increased budgetary support over the last few years, the Government has placed modernisation and infrastructure development of the Armed Forces as the main focus of the National Security and Defence Planning process. The Government of India’s policies ‘Make in India’ and ‘AatmaNirbhar Bharat’ have opened tremendous opportunities for growth in the defence sector. The industry expects Budget to focus on R&D, speedy orders, creation of testing facilities and an ecosystem to support innovation for the defence& aero industry.”

Speaking about Micro, Small and Medium Enterprises (MSMEs) in defence, he said, “India is the fifth-largest economy and is poised to be the third-largest in the near future. A 5 trillion USD economy is in sight. 2047 is the target for India to be a developed nation. To achieve these targets, India needs a strong, organised MSME sector. The TReDs (Trade Receivables Discounting System) platform has been created for faster settlement of dues to MSMEs. With TReDS, a large part of the working capital finance requirement of MSMEs can be taken care of. Government organisations like the Army, Navy, Airforce and Coast Guard must consider registering at these platforms. This will ensure prompt and competitive financing for MSMEs (MRO and other defence-related suppliers), which can resolve the issue of access to finance.”

Vikas Gupta, the Chief Executive Officer and Chief Investment Strategist of OmniScience Capital opined that the defence Budget has to be increased significantly due to the following reasons:

- Since 2017, and even earlier, India has been experiencing friction along its border with China, especially the border in the North East near Bhutan to Ladakh in the North.
- India’s border with Pakistan has always been volatile.
- Kashmir needs a strong defence from infiltrations across the border.
- Pakistan-China highways pass through Indian Territory, which needs to be monitored and eventually taken control of.
- The Quad wants India to play a vital part in defending the marine trade routes passing through the Indian Ocean.

<https://www.financialexpress.com/budget/industry-leaders-share-predictions-for-union-defence-budget-2023-2953129/>

Thu, 19 Jan 2023

India-Armenia Relation in the Changing Regional and International Geopolitics

By DrPravesh Kumar Gupta

India and Armenia have centuries-old historical ties and are strategically important to one another in modern times. However, despite the convergence of interests, bilateral ties remain underdeveloped. S. Jaishankar, India's External Affairs Minister visited Armenia in October 2021, the first visit by an Indian Foreign Minister since the two countries established diplomatic relations in 1992. In order to elevate the level of bilateral cooperation, there are some areas that necessitate immediate attention. Agriculture, pharmaceuticals, and information technology are three areas where New Delhi and Yerevan could expand their partnership. Due to the absence of direct land connectivity between the two nations, bilateral trade is below its potential.

Some notable initiatives have been launched to address the issues associated with the low amount of trade. However, there has been a delay in implementing such measures, which has impeded the growth of bilateral ties. A free trade agreement (FTA) between New Delhi and the Russia-led Eurasian Economic Union (EAEU) is currently being negotiated. Since Armenia is an EAEU member, the conclusion of this FTA would contribute to boosting bilateral trade. Also, India and Armenia are members of the International North-South Transport Corridor (INSTC). Yet, closer cooperation between these two countries is required in order to promote INSTC as a means of transportation between the two countries. Following the Ukrainian conflict, the changing geopolitical landscape presented an opportunity to revitalise the INSTC. Since Russia is pushing for it, New Delhi and Yerevan should also proactively support it. However, to stimulate the areas mentioned above of bilateral cooperation, it is critical to maintain consistency in bilateral engagement at the highest level.

The Strategic Dimension of India-Armenia Relations

The changing regional geopolitics of the South Caucasus has put India-Armenia relations to the test. As Azerbaijan's all-weather ally, Turkey is attempting to position itself as a regional leader and wants to expand its outreach to the Central Asian region as well. Azerbaijan serves as a launching pad for Turkey's expansion into Central Asia. Countering Turkey's and its close ally Pakistan's disruptive objectives is a key convergence of interests between India and Armenia.

These regional geopolitical changes have also prompted India and Armenia to strengthen their relationship. Cooperation in connectivity, security, and defence has emerged as an important component of their bilateral ties. Cooperation in the defence sector is a crucial area with a lot of potential. Armed conflict along Armenia's border with Azerbaijan has pushed the country to sign a defence export deal with India. Under a newly inked export agreement, New Delhi would send military weapons such as missiles, rockets, and ammunition to Armenia.

Moreover, indigenous Pinaka multi-barrel rocket launchers, anti-tank rockets, and ammunition will be exported for the first time from India to Armenia. This contract is estimated to be worth more than Rs. 2,000 crores. Earlier in May 2020, Delhi and Yerevan agreed to exchange four

SWATHI weapon locating radars, developed by the DRDO and capable of pinpointing enemy assets like mortars, shells, and rockets at a distance of 50 km for USD 40 million. This comes as border tensions between Armenia and Azerbaijan keep on escalating frequently. The latter maintains strong diplomatic and military ties with Pakistan and Turkey. Turkey, Pakistan, and Azerbaijan signed a Trilateral Ministers Agreement in 2017 to promote defence cooperation and strengthen bilateral military assistance arrangements. As a result, the recent defence export agreement between India and Armenia is strategic.

Indian policymakers intend to extend the International North-South Transport Corridor through Armenia to connect the Chabahar port in southeast Iran and the Indian Ocean to Eurasia and Finland (INSTC). Once fully operational, Chabahar will become one of the region's most strategic and busy ports. The INSTC, which many see as a counter to China's Belt and Road Initiative (BRI), was conceived in 2000 by India, Iran, and Russia. This will also allow Indian and other South East Asian exporters to reach Iran and other Central Asian countries while avoiding Pakistan and Afghanistan, where security concerns continue to be a major issue.

In conclusion, it would be correct to state that India and Armenia share common interests in a wide range of areas and that there is great potential for security cooperation. And the defence agreement concluded by the two countries may open the door for increased security cooperation. Armenia also provides a viable location for India's outreach to the South Caucasus, where Turkey aspires to be the regional leader. In addition to trade, economy, and connectivity, there is potential for trilateral engagement between India, Armenia, and Russia in the security sector. All of this, however, necessitates India's active participation and Yerevan's reciprocating approach.

<https://www.financialexpress.com/defence/india-armenia-relation-in-the-changing-regional-and-international-geopolitics/2953815/>

ThePrint

Thu, 19 Jan 2023

DefenceGroup Report Shows Pakistan as Low on Priority-List, Outlines India's Middle-Ground Policy

A report by defence and intelligence research group Morning Consult shows that 43 percent of Indians see China as the country's biggest threat, followed by nearly a quarter (22 percent) who think it is the US, while Pakistan comes a distant third – with only 13 percent of respondents perceiving the country as India's foremost threat. This sentiment indicates “public wariness of being drawn into a conflict between the global powers”, the report says. It further outlines how India's middle-ground positionality, decision to not align with either global power, or Russia, affects foreign investment, trade, and security maneuvers. The example it gives is that India's “top trading partners are also its top security concerns”.

In 2022, trade with China touched an all-time high, hitting \$135.98 billion. Yet, the possibility of armed conflict remains a reality, as seen through the rising frequency of clashes. In spite of terse military relations, the report points out that India is part of the China-Russia backed Shanghai Cooperation Organisation, described as an “anti-US bulwark” in the region. The report highlights that forging a middle ground comes with allies, enemies, and policy decisions that are woven

together. “India cannot afford an unchecked alliance between Russia, China and Pakistan, and it relies on positive relations with Russia — which supplies India with affordable energy and military hardware — to help temper Chinese aggression and expansionism,” it says. Public opinion too mirrors these dynamics. Indians view “Russia as the country most allied to its own”, followed by the US, with China and Pakistan as “enemies”.

Inter-connected foreign relations

The invasion of Ukraine furthers India the liminal space India is carving for itself. While 38 percent of Indians hold Russia responsible for the war, a combined 44 percent hold the US and NATO culpable for the ongoing conflict. India’s pledge to continue buying Russian oil may have raised eyebrows in the international community, but the report iterates that the country is acting “pragmatically, not idealistically”. “Russia is an indispensable source of munitions and training, supplying around 90% of India’s military equipment. Even against the backdrop of the invasion, the Indian public narrowly prefers Russia to the United States as a military equipment provider,” says the report.

The US’ need for a bulwark against China will trump its resistance towards an India-Russia relationship, which it will “tacitly” accept, alleges Morning Consult. India’s endorsement of Russia exists in tandem with Prime Minister Narendra Modi’s popularity in the US, says the report. The dual nature of India’s geopolitical relations is a positive for the global supply chain, “as the West continues to rely on India to counterbalance Chinese influence in Asia”. But, there is competition from other Asian economies, namely Vietnam, Malaysia, and Indonesia. However, these supply chains are also subject to certain constraints, the report also says. For example, India’s ambition to advance in the innovation sector could be undercut by Western powers, who are vying for market share in the same sector.

<https://theprint.in/india/defence-group-report-shows-pakistan-as-low-on-priority-list-outlines-indias-middle-ground-policy/1321930/>



Thu, 19 Jan 2023

Regulus Launches New C-UAS Solution that Neutralises Swarms

Known as ‘Ring’, the portable or fixed C-UAS solution utilises global navigation satellite system (GNSS) manipulation to allow the user to take control of the unmanned threat by pushing back, holding, or forcing the system to descend, CEO of Regulus Cyber, Yonatan Zur, told Janes. The solution achieves this by mimicking the satellite signals in the area, he said. The GNSS constellations the system can penetrate include Global Positioning System (GPS), Galileo, GLONASS, and BeiDou – on L1, L2, and L5, he added. In total, the C-UAS weighs 7 kg, can remain operational for up to six hours (with batteries), and is capable of neutralising systems from a 5 km range. This range can be increased, although it is dependent on the type of the antenna and the Israeli export-control limits placed on power transmissions, Zur said.

The effector is capable of neutralising Group one and Group two UASs, particularly in a tactical environment, as well as naval and other land threats such as loitering munitions. Swarm, dark

UAS, and multidirectional attacks can also be defeated, he said. Ring has proven capable of neutralising close to 20 unmanned threats simultaneously, he added. It can be deployed as a standalone system, integrated into a platform, or used on the move with 24/7 automatic or manual operation that can be provided with, or integrated into any detector solution. The system has already been integrated with other local defence company solutions, he said.

Several Ring units can also be deployed to create a 'matrix' interconnected C-UAS protection dome. An omni-protective perimeter, which can be triggered on demand or automatically, is also offered, although this reduces the neutralisation range from 5 to 2 km.

According to Zur, what makes Ring unique compared with other C-UAS solutions is that it bypasses the need to hack or jam the unmanned threat, and while there are other spoofing solutions available, the systems are much larger, more costly, and are typically fixed installations. Ring, on the other hand, is a cheaper alternative, has a very small form factor, and a low radio frequency (RF) signature. GNSS channels are also not very secure, which coupled with the fact that unmanned systems rely "heavily on GPS both for navigation and stabilisation", allows the operator to gain access to and take control of both commercial unmanned systems and most small, unmanned military threats, Zur said.

<https://www.janes.com/defence-news/news-detail/regulus-launches-new-c-uas-solution-that-neutralises-swarms>



Thu, 19 Jan 2023

British Army to Get New Reconnaissance UASs

The company was awarded a contract from the UK Defence Equipment & Support (DE&S) Future Capability Group for the provision of its Magni-X micro-UAS, the company announced on 12 January. An undisclosed number of the vertical take-off and landing (VTOL) UAS will be delivered by mid-2023 to specialist British Army units, the company said. An option for additional units is included in the contract. DE&S had not responded to Janes at the time of publication. The contract is part of the broader British Army Human Machine Teaming (HMT) programme that seeks to enable rapid iterations of novel technology such as autonomous systems. The framework has a financial headroom of GBP300 million (USD365.2 million) over a three-year period – expiring in 2025.

Magni-X is a 2 kg backpack-portable UAS with up to 60 minutes of endurance that is suited for short-range reconnaissance as well as combat and intelligence operations, the company said. The system is capable of autonomous flight and can be integrated with the company's Legion-X system to enable swarming capabilities.

Legion-X is an artificial intelligence (AI)-driven platform that facilitates the swarming of unmanned systems. As part of the agreement, the UAS will be fitted with electro-optical and infrared gimballed cameras offering the user long-range reconnaissance capabilities, the company added.

Magni-X is a more advanced version of the company's Magni UAS, which has a range of 3 km and can fly for up to 30 minutes. The VTOL can be launched from a vehicle, incorporates dual

S-Band and LTE (long-term evolution) communications such as 4G and 5G, and is able to coordinate tracking capabilities.

<https://www.janes.com/defence-news/air-platforms/latest/british-army-to-get-new-reconnaissance-uass>

THE ECONOMIC TIMES

Thu, 19 Jan 2023

New German Defence Minister Boris Pistorius Says he will Strengthen Army, Help Ukraine

Germany's new defence minister said on Thursday it was his task to strengthen the armed forces so that they could do their job at a time of conflict in Europe with Russia waging war against Ukraine. Boris Pistorius was officially made minister on Thursday at a time when Germany is under pressure from Western allies to allow German-made battle tanks to be used in Ukraine to strengthen its defence against the Russian invasion.

Pistorius, a Social Democrat, is due to meet his U.S. counterpart Lloyd Austin later on Thursday, and on Friday defence leaders from about 50 countries and NATO gather at Germany's Ramstein Air Base to discuss how to supply Kyiv with more weapons. "These are not normal times, we have a war raging in Europe. Russia is waging a brutal war of annihilation on a sovereign country, on Ukraine," Pistorius said after a ceremony with military honours at the defence ministry. "Our task is to make the Bundeswehr (armed forces) strong now, it is about deterrence, effectiveness and readiness. And it is about continuing to support Ukraine, also with material of the Bundeswehr," he said. A German government source has told Reuters that Berlin will only allow German-made tanks to be sent to Ukraine if the United States agrees to send its own tanks. Pistorius also said it was a huge task to revamp Germany's armed forces, as announced by Chancellor Olaf Scholz shortly after Russia invaded Ukraine last February, saying they had been neglected over the last few decades.

"It will be my job to make tangible progress," he said. Earlier, German President Frank-Walter Steinmeier promised further military support to Ukraine and told the incoming defence minister that Germany's armed forces must once again become capable of protecting the nation. "Germany is not at war, but the years of the peace dividend from which we Germans have benefited so long and abundantly are over," Steinmeier said. Pistorius takes over from Christine Lambrecht, who after a series of blunders, announced her resignation on Monday.

https://m.economictimes.com/news/defence/new-german-defence-minister-boris-pistorius-says-he-will-strengthen-army-help-ukraine/amp_articleshow/97137709.cms

THE ECONOMIC TIMES

Thu, 19 Jan 2023

UK to Send 600 Brimstone Missiles to Help Ukraine: Defence Minister

Britain plans to send 600 Brimstone missiles to Ukraine to support the country in its fight against Russia, Defence Secretary Ben Wallace said on Thursday. "I can say we're also going to send another 600 Brimstone missiles into theatre which will be incredibly important in helping Ukraine dominate the battlefield," he said from the Tapa army base in Estonia.

https://m.economictimes.com/news/defence/uk-to-send-600-brimstone-missiles-to-help-ukraine-defence-minister/amp_articleshow/97140595.cms

THE WEEK

Thu, 19 Jan 2023

North Korea Sustains High Defense Spending with New Budget

North Korea's rubber-stamp parliament has passed a budget that sustains a high level of defense spending despite economic troubles as leader Kim Jong Un pushes for an aggressive expansion of his nuclear arsenal amid stalled diplomacy. State media reports indicated Kim didn't attend the Supreme People's Assembly's two-day session that ended Wednesday. Pyongyang's official Korean Central News Agency didn't mention any comments by assembly members toward the United States or South Korea in its report of the meetings on Thursday. The assembly convened weeks after Kim called for an "exponential increase" of nuclear warheads, mass production of battlefield tactical nuclear weapons targeting "enemy" South Korea and the development of more advanced intercontinental ballistic missiles designed to reach the U.S. mainland.

His statements during a major political conference in December underscored an intensifying nuclear standoff with the United States and its allies in Asia after he pushed North Korea's weapons tests to a record pace in 2022. The North fired more than 70 missiles last year, including multiple ICBM launches, and conducted a series of tests it described as simulated nuclear attacks on South Korean and U.S. targets. Analysts say Kim's aggressive arms expansion and escalatory nuclear doctrine are aimed at forcing the United States to accept the idea of North Korea as a nuclear power and to negotiate economic and security concessions from a position of strength.

KCNA said the assembly's members projected overall state spending would increase by 1.7% this year but made no mention of the actual size of the budget. The assembly's members devoted 15.9% of this year's national budget to defense spending, the same proportion as last year, to support efforts on "further bolstering up the war deterrence both in quality and quantity" and "defending the dignity and security of the country and the people," KCNA said. It's difficult to

gauge how much money North Korea would be spending on its military capabilities, considering the poor quality of the limited statistics it discloses. According to the U.S. State Department's 2021 World Military Expenditures and Arms Transfers report, North Korea possibly spent around \$4 billion on defense in 2019, which would have amounted to 26% of its estimated gross domestic product, the highest proportion among 170 countries it reviewed.

KCNA's report on the assembly meetings hinted that North Korea was struggling to revive a moribund economy battered by mismanagement, U.S.-led sanctions over Kim's nuclear ambitions, and COVID-19-related border closures. Finance Minister Ko Jong Bom lamented unspecified shortcomings in raising tax revenues from state companies. He called for economic workers to strengthen their "ideological resolve" and put broader national interests before the interests of their specific units, KCNA said. The assembly's members also passed a new law aimed at protecting the "cultured" dialect specific to the capital Pyongyang region, apparently the country's latest step to stem South Korean and other foreign cultural influences.

They also discussed strengthening the surveillance activities of the Central Public Prosecutors Office to establish "revolutionary law-abiding spirit," underscoring how Kim's government continues to strengthen its control of its people in face of the deepening economic challenges. Kim last appeared at the assembly in September, when he defiantly stated his country would never abandon the nuclear weapons he clearly sees as his strongest guarantee of survival. The assembly's members then passed legislation that authorized preemptive nuclear attacks in a broad range of scenarios where it may perceive its leadership as under threat, which included conventional clashes or conflicts that wouldn't necessarily amount to war. Alarmed by the growing North Korean nuclear threat, South Korea and Japan are scrambling to strengthen their defense postures in conjunction with their alliances with the United States.

In an interview with The Associated Press last week, South Korean President Yoon Suk Yeol said his government was engaged in discussions with the Biden administration over joint military planning potentially involving U.S. nuclear assets. The allies are planning to hold a tabletop exercise next month aimed at sharpening their response to where North Korea uses a nuclear weapon. Yoon's government has also said it would call for Washington to deploy strategic military assets near the Korean Peninsula more frequently. In December, Japan made a major break from its strictly self-defense-only postwar principle by adopting a new national security strategy that includes goals to acquire preemptive strike capabilities and cruise missiles in face of growing threats from North Korea, China and Russia.

<https://www.theweek.in/wire-updates/international/2023/01/19/fgn22-nkorea-budget.html>



Thu, 19 Jan 2023

Hundreds more Canada-Made Armoured Vehicles to Arrive in Ukraine by Summer

A Canadian company supplying battle-ready armoured vehicles to Ukraine plans to deliver the 200 vehicles Ottawa promised to Kyiv before summer, the firm's Chief Executive Officer Roman Shimonov said on Thursday. Canadian Defence Minister Anita Anand visited Kyiv to meet

Ukrainian officials on Wednesday and announced the supply of 200 Senator armoured personnel carriers to Ukraine, as part of its latest military assistance package. Ontario-based Roshel Inc builds armoured vehicles for government and commercial organizations, including the U.S State Department and the National Aeronautics and Space Administration (NASA).

Its Roshel Senator armoured personnel carriers, built on Ford Motor Co's (F.N) F-550 large pickup truck chassis with ballistic steel and fitted with mine-protection seats and other safety features, has been used by Ukrainian soldiers in their defence against the Russian invasion that began last February. "Ukraine right now is in full-scale war ... and they have to have a way to transport their personnel safely, and our vehicle provides them with this solution," Shimonov said. The Senators can be used as a medical evacuation vehicle or as a tactical combat vehicle, he said.

The company has established a "sophisticated" secure supply chain and has been shipping a few armoured vehicles every day, Shimonov said in an interview at Roshel's assembly plant in Mississauga. Canada has provided Ukraine with billions of dollars in aid, including over C\$1 billion in military supplies. Shimonov declined to share details, but said Ottawa's order of 200 armoured vehicles for Ukraine is expected to be delivered by summer.

<https://www.reuters.com/world/europe/hundreds-more-canada-made-armoured-vehicles-arrive-ukraine-by-summer-2023-01-19/>



Fri, 20 Jan 2023

Germany could Decide in 'Next Hours' on Ukraine Tank Supply

Berlin left the door open on Thursday to allowing allies to supply Ukraine with German-made modern battle tanks, saying it would "become clear in the next few hours or tomorrow morning". Ukraine's allies are holding a crucial meeting on Friday at the US air base in Ramstein, Germany, to coordinate further military aid to Kyiv. Ahead of the talks, pressure has been growing on Berlin to approve the delivery of German-made Leopard 2 tanks, which are keenly sought after by officials in Kyiv to fight Russian troops. Poland and Finland have indicated that they would be willing to send the tanks to Ukraine but need German approval for the move.

Asked whether Germany would allow the shipments by European allies, newly appointed Defence Minister Boris Pistorius told broadcaster ARD it would "become clear in the next few hours or tomorrow (Friday) morning". In a separate interview with ZDF broadcaster, Pistorius added that "no one is ruling out sending Leopard tanks, or that permission or approval for the delivery by other European partners can be given". Germany has to approve the delivery of the tanks if other countries that have bought them want to donate them to a third country.

"But until then, not all questions have been answered and that's happening currently," Pistorius said. The defence minister, who took office earlier Thursday, however stressed that the decision would be made in coordination with Western allies, in particular the United States. The US was "the most important and largest ally within NATO and that is why it is important that we... do

this in close cooperation with the Americans", he said. Chancellor Olaf Scholz told US congressmen in Davos that Germany will supply heavy tanks to Ukraine if the United States sends tanks too, a senior US lawmaker told AFP on Thursday. But Washington has said that it was not prepared currently to provide advance Abrams tanks to Ukraine. Asked if Germany would then deliver Leopard 2 tanks from its own stores without the US, Pistorius said the issue was being "discussed" by Scholz and President Joe Biden. "I'm pretty sure we'll get a decision on that in the next few days," Pistorius said.

<https://www.thehindu.com/news/international/germany-could-decide-in-next-hours-on-ukraine-tank-supply/article66411092.ece/amp/>



Fri, 20 Jan 2023

महिलाओं को सेना में शामिल करेगा ताइवान: मिलिट्री ट्रेनिंग देगा, चीन की ओर से हमले का खतरा बढ़ता देख बनाई गई योजना

ताइवान ने चीन की घुसपैठ और युद्ध की तैयारियों को भांपते हुए अपनी तैयारी तेज कर दी है। इसके लिए ताइवान महिलाओं को रिजर्व फोर्स में शामिल कर पुरुषों की तरह मिलिट्री ट्रेनिंग देने जा रहा है। जो महिलाएं रिजर्व फोर्स में शामिल होना चाहती हैं, वो स्वेच्छा से ट्रेनिंग के लिए रजिस्ट्रेशन करा सकती हैं।

रक्षा मंत्रालय ने कहा कि वह इस साल की दूसरी तिमाही से 220 महिला सैनिकों को ट्रेनिंग देगा। ताइवान के रक्षा मंत्रालय की ऑल-आउट डिफेंस मोबिलाइजेशन एजेंसी के मेजर जनरल यू वेन-चेंग कह चुके हैं कि इस साल यह योजना परीक्षण के तौर पर होगी। अभी तक हमारे पास सिर्फ पुरुष उम्मीदवारों को ही मिलिट्री ट्रेनिंग देने की क्षमता है, जबकि महिलाओं के लिए ऐसी व्यवस्था नहीं है।

चीनी एयरक्राफ्ट की बढ़ती घुसपैठ के बीच फैसला लिया

इस बयान पर सांसदों ने तीखी प्रतिक्रिया देते हुए कहा है कि महिलाओं को रिजर्व ट्रेनिंग से बाहर करना लैंगिक भेदभाव है। दरअसल, ताइवान की हवाई सीमा में चीन आए दिन लड़ाकू विमानों से घुसपैठ कर रहा है। चीन ने हाल में ही ताइवान के बिलकुल नजदीक बड़ा नौसैनिक अभ्यास किया है। अंदेशा है कि इस ट्रेनिंग की आड़ में चीन युद्ध की तैयारी कर रहा है।

हर साल 1.2 लाख रिजर्व सैनिकों को प्रशिक्षण मिलता है

ताइवान में 18 से 36 वर्ष की उम्र के पुरुषों को अनिवार्य सैन्य सेवा की अवधि को पूरा करना होता है। छुट्टी मिलने के बाद, रिजर्व पुरुष सैनिकों को 8 साल में 4 मौकों पर प्रशिक्षण के लिए दोबारा बुलाया जाता है। ताइवान लगभग 1.2 लाख रिजर्व सैनिकों को सालाना प्रशिक्षण भी देता है।

पुरुषों की अनिवार्य सैन्य सेवा बढ़ाएगी ताइवान सरकार

ताइवान 2024 से पुरुषों के लिए अनिवार्य सैन्य सेवा की अवधि को 4 माह से बढ़ाकर एक साल कर देगा। यह फैसला 2005 के बाद पैदा हुए पुरुषों पर लागू होगा। ताइवान में लगभग 1.7 लाख जवानों का सैन्य बल है, जो ज्यादातर वॉलियंटर्स को मिलाकर बना है।

<https://www.bhaskar.com/amp/international/news/taiwan-to-allow-women-into-military-reserve-force-training-as-china-fears-grow-130821036.html>



Thu, 19 Jan 2023

NATO Military Leadership Addresses New Era of Collective Defence

The NATO Military Committee, joined by Invitees Finland and Sweden, met in Chiefs of Defence format in Brussels. The Chiefs of Defence discussed the strengthening of the Defence and Deterrence posture of the Alliance by increasing readiness, developing capabilities and interlinking national and NATO military planning more closely than ever. Admiral Rob Bauer, Chair of the Military Committee, opened the meeting by referencing the fundamental changes in modern warfare seen in the war in Ukraine: “The war has also shown us that you have to be able to fight tomorrow’s battles as well as yesterday’s battles... today. Modern warfare is just as much about bits and bots as it is about mud and blood.”

Deputy Secretary General Mr. Geoană, who participated in the opening session, stressed the need to strengthen Allied defences to face any threat, from any direction. This requires increased investments, ramping up industrial capacity and transforming NATO for the digital age.

The next session saw General Philippe Lavigne, Supreme Allied Commander Transformation (SACT), brief the Military Committee on the accelerated implementation of the NATO Warfighting Capstone Concept and Warfare Development Agenda. The Chiefs of Defence discussed how multi-domain operations, interoperability and digital transformation help maintain a military edge over potential adversaries. General Lavigne stated, “NATO is now moving towards Multi-Domain Operations with a collective approach to keep the advantage tomorrow, finding the right balance between the “large and few” versus the “small and many.”

General Cavoli, Supreme Allied Commander Europe (SACEUR) briefed the Chiefs of Defence on the implementation of the Concept for the Deterrence and Defence of the Euro-Atlantic Area as well as the New Force Structure. SACEUR noted that NATO military plans were taking into account the wide range of threats and challenges facing the Alliance and detailed how they will drive the New Force Structure Requirement. General Cavoli stated, “The DDA family of plans is the key and will drive our structure, operations, activities, resources, and command and control in the coming years”.

The session on NATO Readiness and Sustainment of military forces saw the Chiefs of Defence exchange views on military stockpiles, pre-positioning of equipment and capability development based on collective defence requirements. Readiness and sustainment are peacetime activities, shaping our effectiveness for Deterrence and Defence. The Chiefs of Defence began their second day with a meeting on the Kosovo Force mission where they were joined by their Operational Partners Armenia, Austria, Finland, Ireland, Moldova, Sweden, Switzerland, and Ukraine. Discussions focused on the past twelve months of the mission, the security situation on the ground as well as the challenging security environment. The Chiefs of Defence reaffirmed their commitment to KFOR’s mission: to promote a safe and stable environment and guarantee freedom of movement for the benefit of all communities in Kosovo.

Turning south, the Military Committee discussed the NATO mission in Iraq with Operational Partners Australia, Finland, and Sweden. The Chiefs of Defence discussed the Mission's ongoing efforts to assist Iraq in promoting greater stability, building its security and defence institutions, and fighting terrorism. The Chiefs of Defence recognised the continued importance of the non-combat advisory and capacity-building mission. Next, Chiefs of Defence were briefed by the Ukrainian Military Representative, Major General Serhii Salkutsan, on behalf of the Ukrainian Chief of Defence, on the military developments in and around Ukraine. The Military Committee commended the Ukrainian forces for their resilience and their relentless devotion to the fight for freedom.

https://www.nato.int/cps/en/natolive/news_210707.htm?selectedLocale=en

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Thu, 19 Jan 2023

"Vigyanika — Science Literature Festival" Event in IISF, Bhopal

Two-day event to showcase India's rich legacy of promoting science & inculcating scientific temper among the public

Vigyanika, a Science Literature Festival is going to be organised during 22 & 23 January, 2023 in the Indian International Science Festival (IISF), MANIT, Bhopal. The venue of this Vigyanika event is the Auditorium, Mechanical Engineering Department, Maulana Azad National Institute of Technology, Bhopal. "Science Literature Festival" is being organised as part of the 8th India International Science Festival (IISF). The inaugural will also have eminent personalities including Dr. N. Kalaiselvi, Secretary, DSIR & Director General, CSIR, Dr. Shekhar C. Mande, President, Vijnana Bharati & Former Director General, CSIR and Prof. Ranjana Aggarwal, Director, CSIR-NIScPR.

The annual India International Science Festival, which is in its 8th edition this time, showcases and celebrates the fruits of science and technology. IISF aims to engage the public with science and demonstrate how science, technology, engineering and mathematics (STEM) provide solutions to improve our lives. This year's IISF is being coordinated and organised by the Ministry of Earth Sciences, Ministry of Science & Technology and Vijnana Bharati. Since the launch of IISF in 2015, the "Science Literature Festival" has emerged as one of the well-attended events. Aligned to the larger objective of IISF, the Vigyanika will showcase India's rich legacy of promoting science & inculcating scientific temper among the public through multilingual scientific literature, science poetry, science drama and folk art. Vigyanika seeks to promote

discussions and deliberations on challenges and future roadmap for effective communication of scientific knowledge.

As India is celebrating AzadiKaAmritMahotsav to mark 75 years of Indian independence, Vigyanika will also commemorate the AmritKaal aligned with science and technology in India through discussions. India is also going through the Presidency phase of the G20 and Indian Institute of Science is the Secretariat for Science 20 (S20). S20 will address the scientific aspects such as climate change, food security and health. One keynote address and one special talk aimed at S20 have been organised in Vigyanika event. Vigyanika will have six sessions, including keynote lectures, panel discussions, and interactions with authors, depiction of scientific ideas through drama & folk dance, and VigyanKaviSammelan. One science drama on Galileo will also be performed by the Shadow Cultural & Social Welfare Society, Bhopal. About 40 eminent scientists, science communicators, authors, science leaders, and policy makers are set to take the stage at Vigyanika.

About 300 science writers, communicators, artists, journalists, young and budding authors, researchers, college students, children, science enthusiasts, science policymakers and citizens are expected to participate in Vigyanika event. For school children from Bhopal, an on-the-spot painting & drawing competition on the theme "India@100 -- My Country, My Vision" has been planned. Other innovative online competitions include Short Play Video Making and National Blog Writing. Mentalism Show by Shri Harish Yadav, Mentalist, Magician & Science Communicator, Jaipur, Rajasthan and Science Kathputli Show by ShriVikas Mishra & Team have also been scheduled on 22 January 2023 at Bhopal. The CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi, Department of Biotechnology (DBT), Govt. of India and VijnanaBharati are coordinating Vigyanika.

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