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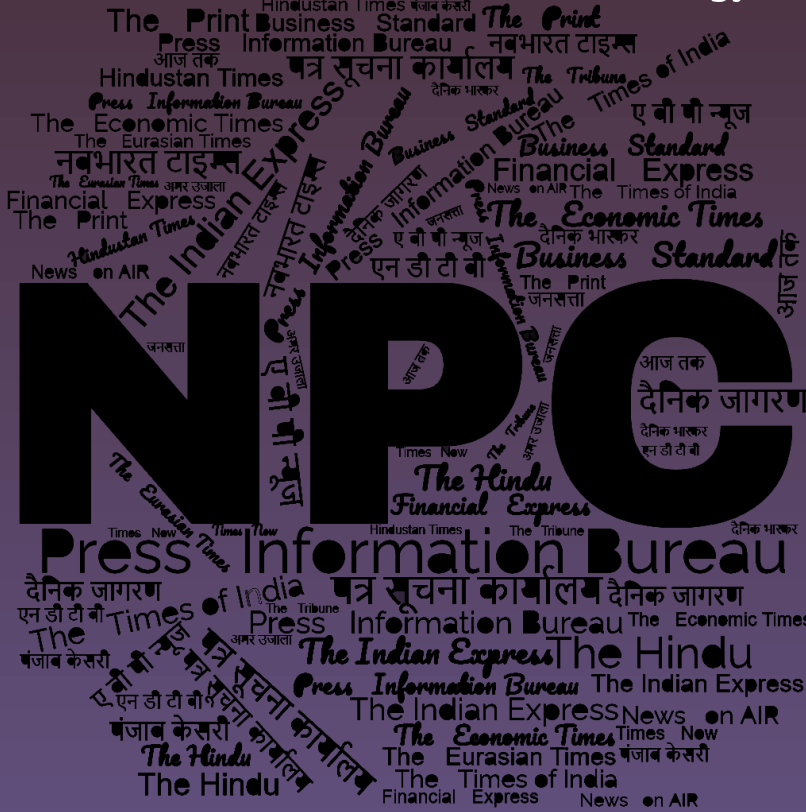
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समाचार पत्रों से चयित अंश Newspapers Clippings

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Explained: What is the Capability of DRDO's UAV Tapas?

India demonstrated significant achievement in Medium Altitude Long Endurance (MALE) drone category with the successful launch of Tapas-BH.

The Defence Research and Development Organization (DRDO) demonstrated the capabilities as Tapas Unmanned Aerial Vehicle (UAV) successfully completed its 200th flight.

The test shows important milestones in addressing the gaps in high-calibre-high-altitude military drones for intelligence, surveillance, and Reconnaissance (ISR) for the Indian armed forces.

Recently, India has also given the Acceptance of Necessity (AoN) for 31 MQ 9B Predator drones with estimated prices soaring beyond \$ 3 billion for the Indian armed forces.

In a series of tests conducted on 27 June at the Aeronautical Test Range in Chitradurga in Karnataka, the indigenous UAV showcased its capabilities to the Indian armed forces for the first time. According to the DRDO, Tapas is now ready for the crucial phase of user evaluation trials. The user evaluation trials will assess its functional and operational capabilities in real-world situations. The evaluation is based on the different altitudes and external parameters to withstand the rigour of military efficacy.

The development of Tapas-BH

Tapas-BH is the answer to India's quest for ISTAR (Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance) requirements.

So far, for the user trials, DRDO with the Indian navy has already carried out the transfer of command-and-control capabilities of the TAPAS Unmanned Aerial Vehicle (UAV).

With DRDO, the ambitious project is developed by Bharat Electronics Limited (BEL), a leading Indian aerospace and defence company under the Ministry of Defence (MoD). The project was prioritized despite the delays as the government increased the cost to 1,786 crores in 2022 from 1,540.74 crores as per the revised estimates.

Importantly, at a later stage, DRDO will further open the scope of collaboration with Hindustan Aeronautics (HAL) alongside the BEL.

The TAPAS BH 201 unmanned aerial vehicle (UAV) is designed and developed in response to the tri-services Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance (ISTAR) needs. The development takes the crucial element of long-endurance with an effective command range of 1000 km which is the basis of Tapas.

Technical specifications

TAPAS-BH is a Medium Altitude Long Endurance (MALE) UAV with an operating altitude of 30000 ft, and an endurance of 24 hours. By definition, TAPAS promises the integration of the

highest-grade military EO Electro-Optical (EO) and Synthetic Aperture Radar (SAR) payloads. That will improve the images dramatically for the ISTAR range of operations for the military across the terrain.

So far, the MALE-category drone has successfully completed its maiden flight in November 2016 with an endurance of several hours at various altitudes.

TAPAS-BH also projects a range of 250 km which can carry a variety of payloads up to a maximum of 350 kg with a wing span of 20.6 metres.

However, it is based on the Rustom-2 platform which has been originally conceptualized and designed to perform Intelligence, Surveillance, and Reconnaissance missions for the Indian armed forces.

Additionally, RUSTOM drones will use Indian GPS GAGAN (GPS Aided Geo Augmented Navigation) developed by ISRO. The DRDO has defined its wide area coverage which can detect and be able to identify small targets.

So, the Tapas embraces greater technological improvement and range because of SATCOM (Satellite Communication) against regular line-of-sight communication. Additionally, it addresses the fundamental issues of automatic landing and take-off that were missing in the initial Rustom 2 prototype.

In fact, Rustom-II is comparable in the same class as Israel Aerospace Industries' HERON.

The indigenous Tapas-BH while still at the final stage of its trials will be critical to the Indian armed forces in terms of saving significant costs and building capabilities.

<https://www.financialexpress.com/business/defence-explained-what-is-the-capability-of-drdo-uav-tapas-3155433/>

Defence News

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Tue, 04 Jul 2023

Visit of Lebanese Armed Forces to Southern Naval Command

A five-member Training delegation from Lebanese Armed Forces led by Brigadier General Hussein Bazzi are on a visit to Southern Naval Command, Kochi and Indian Naval Academy (INA), Ezhimala from 03 - 08 Jul 23. During the ongoing visit, the delegation interacted with Rear Admiral Upal Kundu, Chief Staff Officer (Training) and held discussions on issues of interoperability and collaboration between the two forces in the field of training. The delegation

visited Headquarters Sea Training (HQST) and interacted with Rear Admiral Susheel Menon, Flag Officer Sea Training. Professional interactions were held on varied aspects of Operational Sea Training.

The delegation also visited various training establishments of Southern Naval Command at Kochi and witnessed state of the art training infrastructure, facilities and demonstration on simulators. On completion of visit at Kochi, the delegation would proceed to INA Ezhimala for exploring avenues of mutual cooperation in the field of Naval training.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1937361>



Tue, 04 Jul 2023

Indian Armed Forces Focusing on Enhancing Network Centric Warfare Capabilities

The Indian Armed Forces are gearing up for Network Centric Warfare to ensure the security of the nation amid the evolving tactics of how modern wars are fought. Speaking as the Guest of Honour at a seminar on "Technology Enabled Sensor-Decision-Shooter superiority," Chief of Defence Staff General Anil Chauhan emphasized the critical role of technology in achieving military superiority and highlighted the need for warfighters to comprehend the complexities of modern warfare.

DRDO's Chairman Dr. Samir V Kamat also highlighted the increasing significance of Network Centric Warfare in the future battlefield scenario. Addressing the seminar, Dr. Kamat emphasized the need for secure networks and the timely passage of secure information, while also underscoring the importance of AI-driven autonomy.

China's Network-Centric Warfare

China's Network Centric Warfare (NCW) capability encompasses a range of systems, technologies, and strategies aimed at leveraging information and communication technologies to enhance military capabilities and coordination. Its Integrated Battle Network allows for synchronized actions and the rapid dissemination of information to support decision-making. This is enabled by connecting platforms, sensors, and command centres into an integrated battle network.

China has invested in developing a robust Command, Control, Communications, Computers, Intelligence, and Surveillance (C4ISR) infrastructure. The C4ISR includes advanced communication systems, satellite networks, and surveillance and reconnaissance capabilities. These systems enable real-time data sharing, situational awareness, and decision-making across different military units and platforms.

Gen Anil Chauhan commends DRDO and CENJOWS

CDS General Anil Chauhan also commended the efforts of DRDO and CENJOWS in facilitating collaboration among the services, scientists, industry, and academia to collectively address future battlefield challenges. Notably, the seminar witnessed the participation of senior military officers from the Indian Tri-services, DRDO scientists, industry representatives, and subject matter experts.

Various discussions were held on topics such as strategic and multi-domain awareness, information-sharing networks and communications, analysis, intelligence and decision-making, and prompt and multi-domain targeting. The event served as a platform for officers from the tri-

services, scientists, and think tanks to collaborate and exchange ideas on emerging developments in the field, aiming to generate actionable points for all stakeholders.

<https://www.republicworld.com/india-news/general-news/indian-armed-forces-focusing-on-enhancing-network-centric-warfare-capabilities-articleshow.html>



Wed, 05 Jul 2023

Towards \$5 Billion of Defence Exports

By Neeraj Bansal

From the recent landmark deal with the US on high-value knowledge transfer for fighter jet engine production to an expanding domestic manufacturing capacity and increasing exports, the needle for defence manufacturing is finally moving, and rapidly at that. In the last fiscal, compounded by the push for indigenisation, India has surpassed \$12 billion in defence production and made \$1.94 billion of defence exports—the best showing so far on both parameters, according to data from the ministry of defence.

From expanding the FDI limit under the automatic route to increasing the defence capital procurement budget earmarked for the domestic industry to 75%, the Union government has introduced many reformatory changes. While this will reduce reliance on imports in the mid- to long-term, India is also entering into major defence agreements—such as the BrahMos missiles deal with the Philippines and the \$250-million arms deal with Armenia—to further push locally manufactured commodities on the global stage. The country is also on the cusp of a technological revolution, providing cutting-edge solutions to match global demand. Recently, a defence electronics company bagged exports contracts for communication equipment, electronic assemblies and micro modules from France, Israel and the US. This underlines India's growing strength of catering to the markets of global powerhouses.

What can India do to further indigenisation and ramp up exports? When it comes to defence, self-reliance is important, which, apart from protecting national security, is key to reducing imports and increasing share in global defence markets. To achieve this, India must build on the current momentum on developing domestic manufacturing.

The recent increase in investments will bolster India's R&D ecosystem, much like the strategies followed by countries exporting high-value commodities. For instance, budgetary allocations to the DRDO have been increasing consistently since the past few years. Additionally, schemes, such as Innovations for Defence Excellence and Defence Testing Infrastructure Scheme, are also being upgraded. While the foundation has been laid, India can continue expanding its technological capabilities. For instance, to boost drone manufacturing, while the liberalisation of regulations and the PLI scheme have proven beneficial, further support can be provided by expanding the current outlay of the PLI scheme, enabling industries to deploy higher capital towards R&D. Similar incentivisation of industries developing medium- and high-range military technology can be implemented.

The past few years have seen India scaling up its infrastructural capabilities. For instance, under previous budgets, the capital outlay pertaining to the modernisation of the defence services has continuously increased—57% since FY2019—catalysing the defence manufacturing industry. While the groundwork has been established for a rapid increase in India's output generation

capacity, further thrust can be provided. For instance, the government can encourage a greater participation of the private sector in defence production, which, according to the defence ministry, currently stands at roughly 21%. While initiatives such as the defence offset policy are attracting private players, further enhancing private sector participation can ensure higher output generation and increase its percentage share in exports, which is currently around 70%. Additionally, India can also focus on developing a base for high-end component manufacturing, required for manufacturing military-grade commodities. This can reduce India's import dependence and set the stage for manufacturing full-fledged defence systems—such as tanks, fighter aircrafts, navy vessels and artillery systems—to further boost exports.

According to the Stockholm International Peace Research Institute, amidst rising geopolitical disruptions, global military expenditure grew by 3.7% in 2022, and reached an all-time high of more than \$2 trillion. With traditional players strategising to increase their supply in developing markets, India can leverage its position as a diplomatically sound and a politically stable nation to negotiate and capitalise on this market opportunity. While recent efforts—such as resolving procedural complications and issuing Open General Export Licenses—are facilitating export-linked activities, India can continue expanding its horizons. Besides focusing on high-value technological transformations, the country can continue expanding its presence in the markets of Southeast Asia, Africa and the Middle East, which are looking for dependable and affordable trading options. For instance, as per estimates from MP-IDSA, the military expenditure of Southeast Asian countries has increased by 36% in the last decade. Similarly, according to SIPRI, Middle Eastern countries spent 3.9% of their GDP in 2022 on defence. Given this, India has an opportunity to strengthen its global presence and simultaneously enhance its ties with friendly countries. To attract fresh demand, India can also ensure timely follow-up on its export contracts, provide end-to-end support and assure zero lapses in product reliability. Increasing exports of low-end technology commodities can help in creating a strong base before entering the extremely competitive high-value arms market.

With a changing global landscape and supply chain diversifications, India can establish itself as a major exporting hub and achieve the 2025 target of \$5 billion target in defence exports by following a dynamic and competitive strategy in building higher-value affordable and reliable defence systems and breaking through more markets.

<https://www.financialexpress.com/opinion/towards-5-billion-of-defence-exports/3155662/>



Tue, 04 Jul 2023

Delhi Declaration: United against Terrorism and Harnessing Digital Opportunities for Global Prosperity

In a landmark development, the Shanghai Cooperation Organization (SCO) adopted the New Delhi Declaration, cementing its commitment to combating terrorism and capitalizing on the digital age. This decisive step propels the bloc towards enhanced collaboration among member states.

With the world witnessing an expansion of SCO's membership and a deepening engagement, the New Delhi Declaration stands as a unique and robust testament to the shared dedication of SCO leaders towards collective security, cooperation, and progress. It signifies a significant milestone in

the organization's journey, heralding a new era of collaboration to address pressing challenges and embrace the transformative potential of the digital world.

The Delhi Declaration, a comprehensive framework, outlines the Member States' intent to strengthen cooperation across various domains such as politics, security, trade, economy, finance, investment, culture, and humanitarian ties. This effort aims to build a peaceful, safe, prosperous, and environmentally sustainable planet Earth, fostering harmonious coexistence between humanity and nature.

Of particular importance to the members is the building of joint, coordinated efforts by the international community to counter the activities of terrorist, separatist, and extremist groups. The declaration places special emphasis on preventing the spread of religious intolerance, aggressive nationalism, ethnic and racial discrimination, xenophobia, ideas of fascism, and chauvinism. By reaffirming their commitment to peace, joint development, and equal relations based on mutual respect, friendship, and good-neighborliness, they pledged to continue a constructive dialogue and deepen multifaceted cooperation.

Central Asia is recognized as the core of SCO, and they expressed their commitment to supporting the region's efforts to ensure prosperity, peace, sustainable development, and the establishment of a space characterized by good-neighbourliness, trust, and friendship.

Undoubtedly, the fight against terrorism, separatism, and extremism remains a top priority for the members. Disrupting terror financing channels, suppressing recruitment activities and cross-border movement of terrorists, countering extremism, radicalization of youth, and the dissemination of terrorist ideology are among the proactive steps agreed upon. Moreover, the elimination of "sleeper cells" and terrorist safe havens is of paramount importance.

They reiterated their strong stance against interference in the internal affairs of states under the pretext of countering terrorism and extremism. They also condemned the use of terrorist, extremist, and radical groups for mercenary goals. Recognizing the need for joint coordinated efforts, they emphasized the importance of countering attempts to involve young people in the activities of such groups.

Acknowledging the effectiveness of the SCO Regional Anti-Terrorist Structure (RATS) in promoting cooperation among competent authorities, they underlined the significance of implementing practical measures to enhance cooperation in countering terrorism, separatism, and extremism. The expansion of RATS' capabilities is essential in this regard, they agreed.

The Delhi Declaration highlights the Member States' commitment to develop common principles and approaches to form a unified list of terrorist, separatist, and extremist organizations. The activities of such organizations will be prohibited within the territories of the SCO Member States, subject to their national laws and based on consensus.

Recognizing the pivotal role of the United Nations in countering threats in the information space, they stressed the importance of creating a safe, fair, and open information space. This space must be built on the principles of respecting state sovereignty and non-interference in the internal affairs of other countries, the Declaration stated.

<https://www.financialexpress.com/business/defence-delhi-declaration-united-against-terrorism-and-harnessing-digital-opportunities-for-global-prosperity-3155630/>

Tue, 04 Jul 2023

Want to See Expansion of UNSC Permanent Seats to Include India, Brazil, Germany, Japan: UK

The UK has called for the expansion of the UN Security Council's permanent seats to include India, Brazil, Germany and Japan as well as African representation, underlining that it is high time the powerful UN body entered the 2020s. Permanent Representative of the United Kingdom to the United Nations and President of the Security Council for the month of July Ambassador Barbara Woodward's comments came as she briefed UN correspondents on the programme of work of the Security Council for the month.

On reform of the UN Security Council, "we want to see the expansion of the Council's permanent seats to include India, Brazil, Germany and Japan and African representation. It's high time the Council entered the 2020s," Woodward told reporters here on Monday. Woodward referred to remarks by British Foreign Secretary James Cleverly last week in which he announced the UK's ambition to drive forward reform of the multilateral system.

Woodward said the UK's presidency of the Security Council in July marks the first step in that process. Responding to a question on the reason behind UK's support for permanent UNSC membership for India, Brazil, Germany and Japan, Woodward said: "Our thinking behind the four countries that we supported was partly to do with geographical balance.

"Introducing India and Brazil would bring a wider geographical representation into the Council, but also to bring in countries that have more influence than they had when the original Security Council was put together in 1945 for obvious reasons," she said. "There's a sort of combination of recognising the world as it is today, alongside geographical balance, and that's behind our position too on Africa," she said.

Last week, the UN General Assembly adopted a draft oral decision to continue Intergovernmental Negotiations (IGN) on the Security Council reform at the 78th session of the UN General Assembly that will commence in September. The rollover decision marked the end of the IGN for the current 77th session. India's Permanent Representative at the UN Ambassador Ruchira Kamboj underscored that the roll-over decision of the IGN simply cannot be reduced to a mindless technical exercise.

"We see this technical rollover decision as yet another wasted opportunity to instil a breath of life into a process that has shown no signs of life or growth in over four decades," Kamboj had said. Kamboj had stressed it is now apparent that the IGN could well go on for yet another 75 years without any progress whatsoever in the direction of genuine reform in its current form and modalities – that is, without application of the GA Rules of Procedure, and without a single negotiating text.

Responding to a question by PTI on India's criticism that IGN could well go on for another 75 years without any progress, Woodward said "I recognise that it has been a very frustrating process". The UK has set out its position on UNSC reform more than a decade ago, emphasizing the need to broaden the representation and bring the Security Council up to date, she said.

Woodward said she had good contacts with the IGN co-facilitators this year, who "have tried very hard indeed, but there is such a wide range of views that it seems very difficult indeed to make progress. "So I recognise the frustrations. We too thought it would be useful actually to move to

text-based negotiations, but I'm afraid we didn't. There wasn't enough support for that to make immediate progress. But it's something that we do, as I say, continue to support because we need to see the Security Council come into the 2020s." Woodward underscored that the UK has "listened very carefully to what our friends and partners around the world have been telling us. We've heard and we recognise" concerns by other nations that powerful countries are neglecting their responsibilities.

She said that the UK wants to be an agent of progress to change that notion. She underlined that multilateralism has worked well for the last 80 years, it has underpinned a 40-fold increase in trade since 1950, delivered global vaccines for infectious diseases and thus far prevented another world war, with fewer deaths in violent conflict since its founding than any comparable period. "But that doesn't mean it's perfect and it doesn't mean it will automatically survive for the next 80 years without reform." Woodward asserted that the UK's position is "let's reform that we may preserve" and added that the five priorities laid out by Cleverly for achieving that goal are Security Council reform, reform of the international financial systems, trade, international tax and debt and technology.

She was asked a question on the position of the Uniting for Consensus group, of which Pakistan is a member, that opposes adding new permanent members to the Council and supports creating additional non-permanent seats. Woodward underscored that the "UK's position on UN Security Council reform has been out in the front for a long time now." "We've been very clear that we support permanent membership for India, for Brazil, for Germany and Japan and African permanent membership," she said, adding that the UK welcomes the debate carrying on but "the most important thing is to bring the Council into the 2020s and make some progress on that."

India, the world's most populous country, has been at the forefront of the years-long efforts to reform the Security Council, saying it rightly deserves a place as a permanent member at the UN high-table, which in its current form does not represent the geo-political realities of the 21st Century.

<https://www.financialexpress.com/business/defence-want-to-see-expansion-of-unscc-permanent-seats-to-include-india-brazil-germany-japan-uk-3155130/>

THE ECONOMIC TIMES

Tue, 04 Jul 2023

Taiwan Says 8 Chinese Aircraft Crossed Taiwan Strait Median Line

Eight Chinese aircraft crossed the median line of the Taiwan Strait on Tuesday morning, Taiwan's defence ministry said, as China ramps up military pressure on the democratic island.

Taiwan, which China claims as its own territory despite the island's strong objections, has faced in recent years almost daily missions by Chinese military aircraft, often in the southwestern part of the island's air defence identification zone.

A total of 24 Chinese warplanes, including fighter jets and bombers, were spotted near Taiwan on Tuesday morning starting at about 8 a.m. (0000 GMT), the defence ministry said, adding four Chinese warships also joined a "joint combat readiness patrol".

Taiwan sent aircraft and ships to warn away the Chinese, while missile systems monitored them, the ministry said, using standard wording for its response.

In a statement, the ministry said it is the joint responsibility for all parties in the region to maintain safety and stability.

"Any provocative behaviour that could bring impacts is not good for regional safety," it said.

China, which has never renounced the use of force to bring Taiwan under its control, in April staged drills around the island in anger at President Tsai Ing-wen's meeting with the speaker of the U.S. House of Representatives.

Taiwan's government strongly objects to China's sovereignty claims and vows to defend itself if China attacks the island.

<https://economictimes.indiatimes.com/news/defence/taiwan-says-8-chinese-aircraft-crossed-taiwan-strait-median-line/articleshow/101476687.cms>

THE ECONOMIC TIMES

Tue, 04 Jul 2023

Russia Says Ukraine Attacked Moscow with at Least Five Drones

Russia said on Tuesday that Ukraine had attacked Moscow with at least five drones that were all either shot down or jammed, though one of the capital's main airports had to reroute flights for several hours.

Four Ukrainian drones were shot down by Moscow air defences while a fifth was jammed and crashed into the Odintsovo district of the Moscow region, the Russian defence ministry said. No one was injured.

Russian news agencies reported that two drones were intercepted near a village 30 km (19 miles) southwest of the Kremlin. One drone was detected in the neighbouring Kaluga region.

Landings and takeoffs at Moscow's Vnukovo were restricted for several hours early on Tuesday before normal operations resumed after 0500 GMT. A number of flights from Russia, Turkey, the United Arab Emirates and Egypt were diverted.

One drone was shot down in the area of the town of Kubinka, some 63 km (40 miles) west of Moscow, RIA reported. A Russian air base is near Kubinka.

Russia's foreign and defence ministries denounced the attack as terrorism.

"The Kyiv regime's attempt to attack an area where civilian infrastructure is located, including the airport, which incidentally also receives foreign flights, is yet another act of terrorism," said foreign ministry spokeswoman Maria Zakharova.

"The international community should realise that the United States, Britain, France - permanent members of the UN Security Council - are financing a terrorist regime," she said.

There was no immediate comment from Kyiv. Ukraine almost never publicly claims responsibility for attacks inside Russia or on Russian-controlled territory in Ukraine.

High-profile drone attacks deep inside Russia, the world's largest country, have increased over recent months with attacks on the Kremlin in May and on Russian oil infrastructure last month.

After May's drone attack on the capital, President Vladimir Putin said Ukraine was trying to scare and provoke Russia, adding that the capital's air defences would be strengthened.

"At this moment, the attacks have been repelled by air defence forces," Moscow Mayor Sergei Sobyenin said on his Telegram messaging channel. "All detected drones have been eliminated."

<https://economictimes.indiatimes.com/news/defence/russia-says-ukraine-attacked-moscow-with-at-least-five-drones/articleshow/101478977.cms>

THE ECONOMIC TIMES

Tue, 04 Jul 2023

NATO again Extends Stoltenberg's Mandate, Happy with a Safe Pair of Hands as the War Drags on

NATO Secretary-General Jens Stoltenberg will stay in office for another year, the 31-nation military alliance decided on Tuesday.

Stoltenberg said in a tweet that he is "honoured by NATO Allies' decision to extend my term as Secretary General until 1 October 2024."

"The transatlantic bond between Europe and North America has ensured our freedom and security for nearly 75 years, and in a more dangerous world, our Alliance is more important than ever," he said.

Stoltenberg, a former Norwegian prime minister, has been NATO's top civilian official since 2014. His term had been due to expire last year but was extended then to keep a steady hand at the helm after Russia's full-scale invasion of Ukraine in February 2022.

U.S. President Joe Biden and his NATO counterparts had been due to name a successor when they meet in Vilnius, Lithuania, on July 11-12. But the world's biggest security organization makes decisions by consensus, and no agreement could be found on a new candidate.

Most NATO countries had been keen to name a woman to the top post, and Danish Prime Minister Mette Frederiksen was thought to be a favorite after a meeting with Biden last month.

The president of the European Commission, Ursula von der Leyen, ruled out her candidacy. Other possible names floated, but never publicly named as in the running, were Dutch Prime Minister Mark Rutte and U.K. Defense Secretary Ben Wallace.

It's the fourth time Stoltenberg has had his mandate extended. He's the second-longest serving NATO secretary-general after former Dutch foreign minister Joseph Luns, who spent almost 13 years at the helm from 1971. Quizzed repeatedly in recent weeks over whether he would agree to have his term renewed, Stoltenberg said that he was not seeking to stay and had no plans other than to continue to carry out his duties and wrap his time at the helm in September.

NATO secretaries-general are responsible for chairing meetings and guiding sometimes delicate consultations between the member countries to ensure that compromises are found so that an organization that operates on consensus can continue to function.

They also ensure that decisions are put into action and speak on behalf of all nations with one voice. Stoltenberg has managed to tread a very fine line, refraining from criticizing members led by more go-it-alone presidents and prime ministers, like former U.S. President Donald Trump, Turkish President Recep Tayyip Erdogan or Hungarian Prime Minister Viktor Orban.

With NATO's historical adversary, Russia, locked in a war with Ukraine, the process of naming a new secretary-general has become highly politicized.

Poland opposes the next secretary-general coming from a Nordic state after Stoltenberg's long tenure, and that of his predecessor, Anders Fogh Rasmussen from Denmark. Polish officials wanted someone from a Baltic state. Estonian Prime Minister Kaja Kallas was a preferred candidate.

But other countries are wary of accepting a nominee from the Baltics or Poland, given what appears to be their unconditional support for Ukraine, including on NATO membership, which the U.S. and Germany, among others, insist should not happen before the war ends.

In naming Fogh Rasmussen, a former Danish premier, their 12th secretary general in 2009, NATO's leaders signaled that they wanted a government leader or president at the head of their organization. This has made the path almost impossible for Wallace.

<https://economictimes.indiatimes.com/news/defence/nato-again-extends-stoltenbergs-mandate-happy-with-a-safe-pair-of-hands-as-the-war-drag-on/articleshow/101488720.cms>



Tue, 04 Jul 2023

‘Naval Peer’ of 6th-Gen Fighter, UK Gives a Sneak Peak into Anti-Hypersonic & Laser-Firing Type 83 Warship

By Parth Satam

Defense procurement minister James Cartlidge revealed plans for the Royal Navy’s Future Air Dominance System, with the Type 83 becoming a part of the gamut.

Its defining features have been announced to be Directed Energy Weapons (DEW) and anti-hypersonic technologies. The Type 83 is expected to come into service by the mid-2030s and is slated to replace the Type 45 warships in the Royal Navy.

A report in the UK Defense Journal (UKDJ) said that a concept image had also emerged at a naval conference. Before that, Type 83 was officially unveiled in March 2021 through the publication of the United Kingdom government’s defense command paper titled, ‘Defense in a Competitive Age.’

Highly Advanced Air Defense Ship

The UKDJ compared it to China’s Type 055 destroyer, considered the most heavily armed and advanced in its class. It said the warship is armed with a five-inch main gun, Phalanx Close-In Weapon Systems (CIWS), two 30mm or 40mm guns, and an additional unidentified close-in weapons system (CIWS).

The ship has a sleek design with a distinctive hull that prioritizes stealth and speed and vaguely resembles the Type 26 Frigate and Type 45 destroyer. Its streamlined superstructure suggests advanced radar, sensor fusion, and data processing aided by next-generation computing technology and sophisticated algorithms.

The missile payload seems to be divided into two sets of Mk 41 vertical launch system cells, each holding an estimated 64 VLS, resulting in potentially 128 missile cells per ship.

Ship Will Command Drones

Cartlidge shed more light on the vessel. “Shifting to the sea domain, our Royal Navy is building its Future Air Dominance System.

Likely to comprise the new Type 83 Class platforms – which will one day replace Type 45 – these are more than just ships. They are a distributed sensor network. Effectively a ‘system of systems,’” Cartlidge said at the London Full Spectrum Air Defense Conference.

Cartlidge refers to the evolving man-unmanned teaming concept where crewed aerial platforms like fifth or sixth-generation fighters (the ‘system) control uncrewed drones or unmanned aerial vehicles (‘systems’).

The latter semi-autonomously performs many routines and complementing tasks to take the load of the manned jets.

The idea now envisages both naval and ground weapons like armored vehicles and warships. Russia, China, and the US are leading in developing unmanned surface, underwater, aerial, and ground systems for the purpose. The drones are being tested individually and with existing fifth-generation platforms like the Su-57 and the J-20.

On the naval front, for instance, the US has a large number of under-development surface and underwater maritime drones like the T-38 Devil Ray, L3Harris MAST-13, Sea Gull, Ocean Eagle 43 Medium Unmanned Surface Vessel (MUSV), and the ORCA Extra-Large Unmanned Underwater Vehicle (XLUUV).

It is also testing unmanned ships like the Mariner as a part of the Ghost Fleet Overlord program for mid-sea logistics for rearming and supplies.

Anti-A2/AD & Hypersonic

He went on to describe the ships as “highly automated” that “blend missiles with new technologies such as Directed Energy Weapons (DEWs), incorporating both uncrewed systems and complex radar sensing capabilities to raise an umbrella over our fleet, and control the air over a wider area to maintain freedom of maneuver through increased detection ranges.”

The description essentially appears to counter anti-access/area-denial (A2/AD) weapons pioneered by China. The doctrine aims to keep adversary navies at bay with long-range anti-ship cruise and ballistic missiles like the DF-21D without allowing them to get close to the mainland’s coast.

A large protective arc with newer sensors and DEWs means British military planners envisage the DEWs for destroying the ‘carrier-killer’ DF-21D or hypersonic missiles.

“As the name suggests, dominance is the name of the game. And dominance will be achieved through faster response times and greater lethality over longer distances,” Cartlidge added.

He also mentioned continuing investing in the Sea Viper Evolution program to “ensure (advanced) air and missile defense systems to protect Maritime Task Groups against increasingly more complex threats, including ballistic missiles.”

The Standard Missile (SM-3) and SM-6 carried on the US Arleigh Burke-class are also meant to shoot down nuclear-tipped ballistic missiles aimed at the US mainland, and it can be concluded the new Type 83 is being considered for a similar role.

The possibility of Royal Navy warships patrolling alongside American and Japanese vessels in the Korean Peninsula cannot be ruled out.

A previous report from June on Type 83, which also covered a presentation on the ship’s concept, mentioned the British planners considering the Australian-made CEAFAAR radar for the warship – part of a later UK and Australia defense technology collaboration.

But the report clarified that the idea was only being explored and far from being finalized, as Type 83 was still in a “pre-conceptual stage.”

Developed by Australian company CEA Technologies for their eight-ship ANZAC-class frigates, the CEAFAAR is an active phased array radar with a microwave tile-based design. The microwave tile and the Digital Beam Forming backend combination provide a modular, programmable, and scalable solution.

<https://eurasianimes.com/naval-peer-of-6th-gen-fighter-uk-gives-a-sneak-peak/>



Tue, 04 Jul 2023

Big Milestone! US Army's Latest Ground-Based 'Typhon' Weapon System Test Fired its Lethal & Most Popular Tomahawk Missile

By Sakshi Tiwari

The announcement was made by Rapid Capabilities and Critical Technologies Office (RCCTO), which stated that the Soldiers from the 1st Multi-Domain Task Force and the US Navy Program Executive Office Unmanned Aviation and Strike Weapons collaborated to successfully demonstrate the launch of a Tomahawk missile from the Army's prototype Mid-Range Capability system on June 27, 2023.

In this live-fire exercise, soldiers launched a Tomahawk missile after successful communication from the Battery Operations Center to the launcher. This test comes after the Mid-Range Capability system's successful launch of an SM-6 missile earlier this year, which established the system's full operational capacity.

In early December, media reports indicated that Lockheed Martin had delivered one of the first of four prototype Typhon Mid-Range Capability (MRC) weapon systems to the US Army. The ground-based launcher has been developed as part of the service's launch-drawn efforts to bolster long-range precision fire capabilities.

In a brief statement published one day after the test, RCCTO stated, "This test follows the successful launch of an SM-6 missile from the Mid-Range Capability system earlier this year, confirming the full operational capability of the system."

Earlier this year, the system test-launched a ship-launched Standard Missile-6 (SM-6) from the Typhon weapon system. The new test launch using the Tomahawk missile aligns with the service's goal of achieving some level of operational capability with the first MRC battery before the end of the fiscal year 2023 in September this year.

The Army anticipates that Typhon will largely be used against land-based targets using either Tomahawk or the SM-6 missile. While the Tomahawk has some anti-ship utility, the SM-6's Block-1A variant possesses limited land and sea target attack potential.

The SM-6 was first created as a surface-to-air missile, but it also has anti-ship capabilities that have been tested, and versions with substantially longer ranges and other improvements are currently being developed.

EurAsian Times reported in September 2022 that the United States Navy (USN) "rehearsed" operating its ship-launched Standard Missile-6 (SM-6) from road-mobile launchers under the US

European Command. The rehearsal was done as part of the Typhon system and showed containers on articulated trucks claimed to be carrying the SM-6.

With the successful demonstration of Typhon's entire expected operational capacity, the recent Tomahawk test launch is a significant step forward in the Army's plans to launch a variety of new long-range strike capabilities.

The Navy is the lead service responsible for managing the US military's Tomahawk and SM-6 missile programs. The Army and Navy have been collaborating with the Marines as they acquire their ground-based Tomahawk capability.

Marcia Holmes, deputy director of the US Army's Rapid Capabilities and Critical Technologies Office (RCCTO), said at a conference in September 2021: "By maintaining commonality with the Navy, we can capitalize on modernization efforts, on investment strategies, across a multi-service Mid-Range Capability program to include joint test events...the Navy and the Marine Corps."

The firing of the SM-6 with a land-based launcher is more significant since, despite having limited to no ability to engage an incoming hypersonic target, the US military has asserted that the SM-6 may be the only family of missiles at its disposal that could likely engage a highly maneuverable hypersonic weapon.

Typhon Mid-Range Capability Weapon System

The MRC/"Typhon" missile being developed by the US Army will bridge the gap in mid-range capability between the 482-kilometer range of the Precision Strike Missile (PrSM) and the 2776-kilometer range of the Long-Range Hypersonic Weapon (LRHW). In other words, it requires missiles to reach targets up to 1,800 km away.

"The MRC rapidly progressed from a blank piece of paper in July 2020 to the soldiers' hands in just over two years. The [Rapid Capabilities and Critical Technologies Office] team, as well as our joint service and industry partners, delivered this hardware so soldiers can begin training as quickly as possible," said Lt. Gen. Robert Rasch, a senior official overseeing the weapon's development at RCCTO in December last year.

In November 2020, the Army chose Lockheed to construct the weapon system. Earlier in 2022, the service and the manufacturer indicated that four prototypes would be delivered by the end of that same year.

According to information the Army had previously provided, a full Typhon Weapon System battery comprises four launchers, a command post, and reload and support vehicles, all on trailers. Offboard sources are used to supply the targeting information.

Additionally, the Mk 41 Vertical Launch System (VLS) used by several US Navy and other warships served as a model for the Typhon launchers. Currently, a large variety of containerized missiles can be fired from this launcher, and other types may be added later.

Typhon also includes a fire control system adapted from the combat-proven Aegis Combat System and the launchers built on the Mk 41 platform. The Navy has tested the Mk 70 Expeditionary Launcher, a containerized launcher based on the Mk 41 and very close to the Typhon concept.

With Tomahawk at its disposal, Typhon gives the Army a new weapon that enables it to hold land-based targets at risk within a bubble that may be created that stretches around 1,000 miles in all directions from the location of the launchers. The SM-6's shorter range increases the overall system's versatility.

In any potential higher-end confrontation, especially against China, the US military wants more choices for hitting targets on land, at sea, and in the air throughout the enormous expanses of the Indo-Pacific area.

Concerns about the potential impact of Russian and Chinese artillery on US combat operations and ground combat systems have returned due to Russia's and China's improved longer-ranged artillery systems, new employment techniques leveraging unmanned aerial vehicles (UAV) for target acquisition, and the proliferation of special munitions like precision, thermobaric, loitering, and top-attack.

As already mentioned, the capability of Tomahawk and SM-6 to engage different target types suggests that an MRC battery may one day be equipped with greater anti-access/aerial denial functionality.

<https://eurasianimes.com/edited-us-armys-latest-ground-based-typhon-weapon-system/>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Tue, 04 Jul 2023

G20 Member Countries Discuss Research Ministerial Declaration at the RIIG Summit Today

The Secretary, Department of Science and Technology, Dr. Srivari Chandrasekhar welcomed delegates at the G-20 Research and Innovation Initiative (RIIG) Summit which started off in Mumbai today (July 4, 2023).

Recognising the significant role of research, development and innovation in growth and development, Dr. Chandrasekhar highlighted the constructive participation of all G-20 member countries in the drafting of the Ministerial Declaration of the G-20 science engagements.

India has taken forward the Research and Innovation Initiative (RIIG) during its Presidency in 2023 under the theme "Research and Innovation for Equitable Society". A total of 5 RIIG meetings/conferences were hosted by India during 2023 under the theme "Research and Innovation for Equitable Society". The RIIG Inception Meeting was held in Kolkata, followed by 4 thematic conferences in Ranchi (Theme: Materials for Sustainable Energy), Dibrugarh (Theme: Circular bioeconomy), Dharamshala (Theme: Eco-Innovations for Energy Transition), and Diu (Theme: Sustainable Blue-economy).

The meeting discussed and negotiated the draft Outcome document at the RIIG Summit today. It marks the culmination of the G-20 science engagements that took place through series of meetings in different parts of India during India's G 20 Presidency in 2023.

The Outcome Document shall be release at the end of the Research Ministers Meeting which is scheduled to take place in Mumbai tomorrow, that is, on July 5, 2023.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1937277>

Chandrayaan-3 Launch: Why Landing on the Moon is a Nightmare

By Sibu Tripathi: The Indian Space Research Organisation (Isro) will launch the ambitious Chandrayaan-3 mission to the Moon on July 13 from the Satish Dhawan Space Centre in Sriharikota.

The spacecraft will embark on a nearly two-month-long journey to the Moon at the end of which it will attempt a 'soft landing' on the lunar surface. While Isro has successfully launched lunar missions in the past, landing on the Moon is a different ball game altogether, something which the entire country witnessed when the Chandrayaan-2 lander and rover crashed on the Moon in 2019.

Four years after that setback, Chandrayaan-3 will aim to do what Chandrayaan-2 couldn't. However, the Moon is not gonna make it easy.

Why is the Moon so challenging?

Landing on the Moon requires multiple high-tech systems to align precisely, functioning together like a well-oiled machine. These include pinpoint navigation guidance, accurate flight dynamics, clear terrain imagery, perfectly timed thruster firings, and ultimately, the ability to decelerate at the right moment and at the right speed to reach that right landing spot.

A misstep in any of these processes can - and often does - lead to mission failure.

IndiaToday.in spoke to a senior scientist who was part of the Chandrayaan-2 mission to understand what it takes to land on the Moon. The scientist explains that once a Moon-bound lander separates from the propulsion module and begins its descent towards the lunar surface, it must carefully control both the speed at which it drops to the surface as well as the rate at which it swings sideways.

The lander's speed needs to be reduced autonomously to three meters per second to ensure a soft landing. Thrusters (engines) will be fired to achieve this reduction in speed and control the lander's orientation during descent.

Earlier this year, Japan's ispace encountered a problem in this crucial phase of its attempt to land on the Moon. Its Hakuto-R lunar lander failed to slow down in time due to an altitude miscalculation, leading to mission failure. India's Chandrayaan-2 had experienced a similar fault caused by a software glitch.

While the Moon lacks an atmosphere, it does possess gravity, approximately one-sixth (1/6th) of Earth's. Understanding the peculiarities of lunar gravity is crucial for planning and executing successful lunar missions.

The reduced gravitational force necessitates even more precise control of the descent rate, as there is less natural deceleration. This puts the burden of landing on the lander's thrusters which must fire for the right amount of time and with the right force. Failure to manage the spacecraft's descent speed appropriately can lead to rapid and potentially dangerous descent.

The Moon's surface, bombarded for millions of years with foreign objects, poses the greatest challenge for landing due to its vast craters and loosely held regolith (soil and rocks). Different

landing options are therefore chosen beforehand, including primary, alternate, and secondary contingency landing sites.

The terrain within the landing radius plays a crucial role in achieving a successful touchdown. Chandrayaan-3 is equipped with two lander hazard detection and avoidance cameras, inputs from which will be used to make the final decision on where to land.

Crucially, while the decision-making data will be sent to mission control, the actual decision will be taken by the lander itself because of the time delay in sending inputs to the craft from Earth.

And so, this is what makes lunar landings so difficult.

While the Moon may appear serene and peaceful in the night sky, it poses treacherous challenges in its mysterious ways. Chandrayaan-3 will have to overcome these hurdles to secure its place in the history books.

<https://www.indiatoday.in/science/chandrayaan-3/story/chandrayaan-3-launch-why-landing-on-the-moon-is-a-nightmare-2401611-2023-07-04>



Wed, 05 Jul 2023

National Research Foundation Approved State of Science: Where India Lags

By Amitabh Sinha

The government's approval last week for a National Research Foundation (NRF) is being widely welcomed by the scientific community. The NRF has the potential to, single-handedly, address a whole range of deficiencies in India's scientific research sector that have been flagged for years now.

A huge pool of science and engineering graduates, a large network of laboratories and research institutions, and active involvement in some of the frontline areas of scientific research usually puts India among the leading countries with deep scientific abilities. However, in comparative terms, India lags behind several countries, some with much more limited resources, on a variety of research indicators.

Expenditure on R&D

Primary among these is the money India spends on research and development activities. For more than two decades now, the Centre's stated objective has been to allocate at least two per cent of the national GDP on R&D. Not only has this objective not been met, the expenditure on research as a proportion of GDP has gone down, from about 0.8 per cent at the start of this millennium to about 0.65 per cent now. For the last decade or so, this share has remained stagnant.

This does not mean that money for research has not increased. The spending on research has more than tripled in the last 15 years, from Rs 39,437 crore in 2007-08 to over 1.27 lakh crore in 2020-21. But India's GDP has grown faster, and so the share of research has gone down.

At least 37 countries spent more than 1 per cent of their GDP on R&D in 2018, the last year for which data from all countries is available, according to the 2021 UNESCO Science Report. Fifteen of these spent two per cent or more. Globally, about 1.79 per cent of (world) GDP is spent on R&D activities. Unlike India, at the global level, growth in R&D expenditure has outpaced GDP growth.

In response to a Parliament question in March, the government said India's total expenditure on R&D in purchasing power parity (PPP) terms in 2018 — about US\$ 68 billion — was the sixth highest in the world, after the US, China, Japan, Germany and South Korea. However, India was far behind. The US and China both spent more than US\$ 500 billion that year.

India spent only 42 US dollars (in PPP terms) per researcher in 2020, compared with nearly 2,150 by Israel, 2,180 by South Korea and 2,183 by the United States.

Moreover, women comprise only 18 per cent of total scientific researchers in India, while globally this number was 33 per cent.

Research in universities

India has nearly 40,000 institutions of higher education, mostly colleges. More than 1,200 of these are full-fledged universities. Only one per cent of these engage in active research, according to the detailed project report on NRF. A comparative number for other countries is not available, but it is common knowledge that in most leading countries, universities are the centres of research and development activities.

“If I am asked to single out only one area in which I would like to see NRF make a difference, it would be here — in coupling education and research. This is the biggest anomaly that exists in the Indian system. And it is unsustainable. So, the NRF concept puts a great amount of emphasis on rectifying this,” Professor Arindam Ghosh of Indian Institute of Science, Bengaluru, said.

According to the Department of Science and Technology (DST), there were 7,888 R&D institutions in the country in 2021, including more than 5,200 units in the private sector and industries, which engage mainly in industry-specific research. The count of private sector units even includes 921 industries “with potential” to undertake research activities.

Research output

India produced 25,550 doctorates in 2020-21, of which 14,983 were in science and engineering disciplines. This 59 per cent proportion in the overall doctorates compares well with other countries, putting India in the seventh rank overall. Even in absolute terms, India's annual output of science and engineering doctorates is right at the top, with only the US, China and the United Kingdom producing more.

But because of India's large population, this is not impressive in proportional terms. In fact, the number of researchers per million population in India, 262, is extremely low compared with even developing countries like Brazil (888), South Africa (484) or Mexico (349).

About 94 per cent of the Indians (34,241 out of 36,565) who obtained a doctorate at a US university between 2001 and 2020 did so in science and engineering disciplines, second only to China, according to DST data.

Publications and patents

Data from DST showed that Indian researchers published 149,213 articles in science and engineering journals across the world in 2020, almost two and a half times more than a decade earlier. However, it still constituted only 5 per cent of all the articles. Chinese researchers contributed 23 per cent, while US researchers accounted for 15.5 per cent.

In 2021, a total of 61,573 patents were filed in India, making it the sixth largest in the world. But this was nowhere close to the nearly 16 lakh patents filed in China, and about six lakh in the United States that year.

<https://indianexpress.com/article/explained/explained-sci-tech/national-research-foundation-approved-state-of-science-where-india-lags-8751448/>

