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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.
	<b>DRDO News</b>	<b>1-7</b>
	<b>DRDO Technology News</b>	<b>1-7</b>
1.	DRDO is Ready to Develop Various Engine Classes for UAVs and Marine Propulsion Systems, Says Chairman S Kamat	<i>Financial Express</i> 1
2.	समंदर में Indian Navy की बढ़ेगी और ताकत, DRDO और नेवल ग्रुप फ्रांस मिलकर बनाएंगे INS कलवरी का AIP सिस्टम	<i>जागरण</i> 4
3.	Aatmanirbhar Bharat: DRDO'S Fuel Cell-Based Air Independent Propulsion System to soon be Fitted Onboard INS Kalvari, Significantly Enhancing its Submerged Endurance	<i>Press Information Bureau</i> 5
4.	DRDO and Naval Group France Sign Pact to Fit Indigenous AIP System on Kalvari Class Submarines	<i>The Indian Express</i> 6
5.	DRDO'S Light Tank to be Equipped with Modern Warfare Technologies	<i>Republicworld.com</i> 7
	<b>Defence News</b>	<b>8-27</b>
	<b>Defence Strategic: National/International</b>	<b>8-27</b>
6.	पांचवीं पनडुब्बी 'INS वागीर' भारतीय नौसेना में शामिल	<i>पंजाब केसरी</i> 8
7.	Commissioning of Fifth Kalvari Class Submarine 'Vagir' at Naval Dockyard, Mumbai	<i>Press Information Bureau</i> 8
8.	Fifth Scorpene Submarine INS Vagir Joins the Indian Navy's Fleet	<i>Business Standard</i> 10
9.	INS Vagir Inducted into Navy: Stealth-Class Submarine will Serve as Potent Deterrent for Adversaries, Says Chief	<i>The Indian Express</i> 11
10.	INS Vagir: Here's All You Should Know About India's New Attack Submarine	<i>The Economic Times</i> 12
11.	Indigenous Equipment Set to be in Focus at Republic Day Parade	<i>Hindustan Times</i> 13
12.	India's First Personal Aerial Vehicle – Varuna will be Showcased on Jan 26 this Year	<i>Financial Express</i> 14
13.	Army Chief Visits Forward Posts at LAC	<i>The Pioneer</i> 16
14.	Why are Andaman and Nicobar Islands a key Indian Military Asset?	<i>Hindustan Times</i> 17
15.	China Wants to Reduce India's Influence in Indian Ocean Region, Say Papers Submitted at DGPS' Meet	<i>The Economic Times</i> 19
16.	Why China is Forced to Improve Ties with US	<i>The Tribune</i> 20
17.	Taiwan Again Detects Chinese Aircraft and Vessels Near Island, Defence Ministry on Alert	<i>Republicworld.com</i> 22
18.	Poland Pushes for More Tanks for Kyiv, Will Seek German Ok	<i>The Pioneer</i> 23
19.	Why Iran's Drone Programme is a 'Triumph' – Harsh Sanctions, Western Components & Simple Designs	<i>The Print</i> 24
	<b>Science &amp; Technology News</b>	<b>27-31</b>
20.	Science Literature Fests Boost Scientific Temper	<i>The Pioneer</i> 27
21.	How Apple Prioritises Health with their Innovations that are 'Grounded in Science'	<i>The Indian Express</i> 29
22.	Scientists from McGill University, Indian Institute of Science Detect Radio Signals Sent from the Galaxy	<i>Financial Express</i> 30

*Mon, 23 Jan 2023*

### **DRDO is Ready to Develop Various Engine Classes for UAVs and Marine Propulsion Systems, Says Chairman S Kamat**

The Defence Research and Development Organisation (DRDO) is building complex systems, including missiles, fighter aircraft, radar, sonar, submarine systems, electronic warfare, and complex weapon systems. Many such critical and advanced technologies are often denied to India in the global environment of technology control regimes. While critics also point out the incessant delays and delivery of some other key projects, running through many years, the limited budgets for R&D pose significant challenges for the DRDO.

In an exclusive interaction, Samir V Kamat, Secretary Department of Defence R&D and Chairman DRDO speaks with Manish Kumar Jha on developing critical technologies in 2023. Kamat reiterates DRDO's resolve to make the country self-reliant by developing indigenous advanced defence technologies and complex systems.

Kamat outlines his thrust areas in the strategic and tactical sectors, focusing on the next generation of military platforms and systems. He opens up on the technological breakthroughs in various DRDO labs scattered across India from the light tank to unmanned systems to marine engine. The successful design and development of highly complex single-crystal blade technology – a key component for aero-engine- show the inherent capabilities of the DRDO in the advanced materials which could herald a new era for indigenous fighter aircraft.

To deal with emerging threats and the changing nature of modern-day warfare, DRDO is making every effort towards the modernization of our Armed Forces. The high-altitude areas are ranging from 11000-16500 ft. above mean sea level and are under extreme weather conditions. Due to difficulties faced in the operations and sustenance of tracked vehicles in the northeastern borders, there is a requirement for tailor-made light tanks for high-altitude applications.

The biggest advantage of the light tank is that they are “air portable” and easily deployable in critical areas. To meet the present operational requirement, a dedicated project has been assigned to Combat Vehicles Research & Development Establishment (CVRDE) under the DRDO for the development of a light tank in collaboration with the Lead System Integrator (Larsen & Toubro Limited, Mumbai).

The Light tank will provide a versatile platform with a high power-to-weight ratio, superior firepower, protection, surveillance, and greater communication capabilities. Light Tank is equipped with cutting edge technologies viz. Artificial Intelligence, Drone Integration, a high

degree of situational awareness, and amphibious operation, to name a few. The light tank possesses the lethal firepower to defeat the armour of low-flying helicopters and to destroy strongholds & fortifications of the adversary. The tank is expected to be rolled out in the current year.

TAPAS 201 has been designed and developed by the Bengaluru-based Aeronautical Development Establishment (ADE). This is designed to perform Intelligence, Surveillance, and Reconnaissance (ISR) missions for Indian Armed Forces. Its mission requirements are to provide continuous wide area coverage and yet be able to identify small targets. Tapas 201 achieved a significant milestone after undertaking a flight test lasting 18 hrs at the Aeronautical Test Range in Chitradurga, Karnataka. This multi-mission UAV is being developed to carry out Intelligence, Surveillance and Reconnaissance roles for the three wings of the armed forces with endurance in the range of 24 to 30 hours to fulfil the critical requirements in the ISR domain.

DRDO has already developed “MALE UAV TAPAS”. As of date, more than 150 flight trials of TAPAS UAV have been completed. During these flights, altitude and endurance have touched the desired requirements. Non-availability of some critical technologies like engine, Twin Element Airfoil Wing, Automatic Take Off and landing etc., were some of the constraints in realizing the UAV systems.

The long development cycle time for the initial projects can be attributed to the steep learning curve of R&D centers and indigenous industries. It is expected to reduce substantially for the subsequent platforms like high altitude long endurance (HALE) UAV, since most of the legacy knowledge, technologies and systems will be effectively leveraged by all R&D partners in academia, industry and DRDO laboratories.

KMGT has demonstrated 12MW rated power under Indian sea conditions, which is equivalent to about 16MW under International Standard Atmospheric (ISA) conditions. This power output suffices for most requirements of the Indian Navy like cruisers and destroyers, while heavier warships like aircraft carriers require higher power output turbines and initiate action accordingly. The development of Gas Turbine is a highly resource-intensive activity, and an adequate production volume is required to break even (apportion the development cost).

DRDO in association with the Navy will work out the requirements. Having demonstrated the technology of marine gas turbine through its KMGT project, DRDO has achieved the indigenous capability to undertake any such upgradation effort.

DRDO has developed single crystal blade technology and supplied 60 of these blades to Hindustan Aeronautics Limited (HAL) as part of their indigenous helicopter development program for helicopter engine application. It is part of a program taken up by the Defence Metallurgical Research Laboratory (DMRL), a premier DRDO laboratory to develop five sets (300 in number) of single crystal high-pressure turbine (HPT) blades using a nickel-based superalloy. DRDO with the industry partners and Centre of Excellence (CoE) is involved in the advancement of this technology including propulsion systems.

With many technologies maturing, our country is in a position to develop various engine classes. 52 kN engine is one such class.

Air Independent Propulsion System (AIP) has been developed for the submarines of the Indian Navy. The AIP is marine propulsion technology that allows a non-nuclear submarine to operate

without access to atmospheric oxygen (by surfacing or using a snorkel). The AIP can augment or replace the diesel-electric propulsion system of non-nuclear vessels.

The AIP has a force multiplier effect on the lethality of a diesel-electric submarine as it raises the submerged endurance of the boat, several-fold. Fuel cell-based AIP has merits in performance compared to other technologies.

The indigenous AIP propulsion system developed by DRDO is a modular system that can be easily configured for any conventional submarine platform. Fuel Cell based air-independent propulsion (AIP) system Crossed important milestones of user-specific tests. It is one of the most advanced AIP Systems in the world, where Fuel Cell Technology is used to generate onboard power.

Now the next step is to make a version to be fitted into the submarine. DRDO has already developed the AIP system in the country and our focus is to get it integrated with the platform.

R&D is a continuous process. Towards this, various technologies are developed and tested as part of feasibility before initiating a mission mode project.

AMCA is currently at the Critical Design Review Phase. The program cost will be of the order of a few thousand crore rupees. It is proposed to pursue the manufacturing of prototypes, series production and lifetime support of AMCA through an SPV which will also consist of private industry partners. Indian Private Industries are expected to be invested in the SPV

DRDO has signed MoUs with IITs/Universities for setting up the DRDO-Industry-Academia-led Centre of Excellence (DIA-CoE) across the country for collaborative research under the identified research areas. These centres will undertake DRDO-funded science and technology projects and create special design and test facilities as required. Currently, 15 such DIA-CoEs have been established.

The major aim of establishing such centres is to harness & synergize the combined strength of academia, student community, research fellows, niche technology industries & DRDO scientists to provide impetus to research and innovations, in order to achieve future defence needs. These Centres will be conducting directed research in the advanced areas of technologies with multi-institutional collaboration for defence & security.

DRDO also funds research under its various Grant-in-Aid Scheme to undertake research in the fields of Aeronautics, Armaments, Naval and Life Sciences to strengthen funded research. Further, the Technology Development Fund (TDF) Scheme also funds industries, especially start-ups and MSMEs up to an amount of Rs 50 Crore for innovation, research and development of defence technologies in the field of defence and aerospace.

<https://www.financialexpress.com/defence/drdo-is-ready-to-develop-various-engine-classes-for-uavs-and-marine-propulsion-systems-says-chairman-s-kamat/2957222/>

## समंदर में Indian Navy की बढ़ेगी और ताकत, DRDO और नेवल ग्रुप फ्रांस मिलकर बनाएंगे INS कलवरी का AIP सिस्टम

रक्षा अनुसंधान एवं विकास संगठन (DRDO) और नेवल ग्रुप फ्रांस कलवरी श्रेणी पनडुब्बी में स्वदेशी एयर इंडिपेंडेंट प्रोपल्शन (AIP) के एकीकरण के लिए साथ मिलकर विस्तृत डिजाइन तैयार करेंगे। यह कदम रक्षा अनुसंधान क्षेत्र में आत्मनिर्भर भारत की बड़ी पहल है। भारत-फ्रांस की साझेदारी के तहत तैयार किए जाने वाले इस डिजाइन से डीआरडीओ की नौसेना सामग्री अनुसंधान प्रयोगशाला (एनएमआरएल) द्वारा बनाए गए फ्यूल सेल आधारित एआईपी सिस्टम को आईएनएस कलवरी पर फिट करने योग्य बनाया जाएगा।

### पहले के मुकाबले घातक होगी पनडुब्बी की मारक क्षमता

एआईपी से डीजल-इलेक्ट्रिक पनडुब्बी की मारक क्षमता पहले से कहीं अधिक घातक हो जाती है क्योंकि इससे पनडुब्बी कई गुणा लंबे समय तक पानी के अंदर रह सकती है। फ्यूल सेल आधारित एआईपी अन्य प्रौद्योगिकियों के मुकाबले अधिक कारगर है और इस मामले में सबसे अलग है कि इसमें ऑनबोर्ड हाइड्रोजन उत्पन्न होती है।

### एनएमआरएल और भारतीय उद्योग मिलकर बनाएंगे मॉड्यूल

एनएमआरएल ने यह प्रौद्योगिकी भारतीय उद्योगों के सहयोग से विकसित की है। इसके भूमि आधारित एआईपी प्रोटोटाइप का पहले ही सफल परीक्षण हो चुका है। डीआरडीओ (एनएमआरएल) और नेवल ग्रुप फ्रांस के बीच यह साझेदारी से इस ऊर्जा मॉड्यूल के विस्तृत डिजाइन प्रमाणन की दिशा में बेहद महत्वपूर्ण कदम होगी। इस मॉड्यूल को एनएमआरएल और भारतीय उद्योग मिलकर निष्पादित करेंगे।

### एआईपी के स्वदेशीकरण की होगी शुरुआत

इन कदमों से एआईपी के स्वदेशीकरण और औद्योगिकीकरण की शुरुआत का मार्ग प्रशस्त होगा और भारतीय उद्योग भविष्य में पनडुब्बियों पर फिट होने वाली हल्ल भी तैयार कर सकेंगे। नेवल समूह के अध्यक्ष और सीईओ पियरे एरिक ने कहा कि डीआरडीओ एआईपी को कलवरी श्रेणी पनडुब्बियों में एकीकृत करने के लिए हमारी भागीदारी जल के भीतर रक्षा के क्षेत्र में फ्रांस और भारत के बीच रणनीतिक द्विपक्षीय सहयोग को आगे बढ़ाने वाला कदम है।

<https://www.jagran.com/news/national-in-the-sea-the-indian-navy-will-increase-its-strength-drdo-and-naval-group-france-together-will-build-the-aip-system-of-ins-kalvari-23306946.html>



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

*Mon, 23 Jan 2023*

**Aatmanirbhar Bharat: DRDO'S Fuel Cell-Based Air Independent Propulsion System to soon be Fitted Onboard INS Kalvari, Significantly Enhancing its Submerged Endurance**

**DRDO & Naval Group France sign agreement to safely integrate the indigenous system in Kalvari-class submarines**

In a major boost to 'Aatmanirbhar Bharat', Fuel Cell-based Air Independent Propulsion (AIP) system of DRDO's Naval Materials Research Laboratory (NMRL) will soon be fitted onboard INS Kalvari.



An agreement was signed between senior officials of NMRL and Naval Group France in Mumbai on January 23, 2023 to extend cooperation to enter into the detailed design phase for integration of indigenous AIP in the Kalvari class submarines. As part of the agreement, Naval Group France will certify the AIP design for integration in the submarines.

The AIP has a force multiplier effect on lethality of a diesel electric submarine as it enhances the submerged endurance by several folds. It has merits in performance compared to other technologies and is unique as the hydrogen is generated onboard. This technology has been successfully developed by NMRL with the support of Indian industry partners. The technology has now reached the stage of maturity for industrialisation.

It is worth mentioning that the land-based prototype of the NMRL's AIP has been tested successfully. This new endeavour will be a significant step towards the detailed design certification of the energy module, which will be performed by NMRL along with Indian industry and design of the platforms impacted by the integration of the indigenous AIP inside the Indian submarine by Naval Group. These actions will seamlessly lead the way to start of localisation and industrialization of AIP including the hull fabrication by the Indian industry for future fitment on-board the submarines.

Speaking on the occasion, Chairman & CEO at Naval Group France Mr Pierre Eric Pommellet said, they are proud to cooperate with Indian stakeholders to safely integrate the AIP in the Kalvari class submarines, which have been built by Mazagon Dock Shipbuilders Limited. This is a natural extension of strategic bilateral cooperation shared between India and France in the field of underwater defence & deterrence and in line with Naval Group's continued commitment towards the Government's 'Aatmanirbhar Bharat' policy.

Raksha Mantri Shri Rajnath Singh has complimented DRDO, Indian Navy and MDL for taking Aatmanirbhar Bharat initiative forward in underwater domain. Secretary Department of Defence R&D and Chairman DRDO Dr Samir V Kamat also congratulated NMRL, Indian Navy, MDL and Naval Group France for this strategic partnership.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1893096>



*Tue, 24 Jan 2023*

## **DRDO and Naval Group France Sign Pact to Fit Indigenous AIP System on Kalvari Class Submarines**

The Defence Research and Development Organisation (DRDO) has signed an agreement with the Naval Group France under which the indigenous Fuel Cell-based Air Independent Propulsion (AIP) system will soon be fitted on INS Kalvari.

A statement by DRDO Monday said the agreement was signed between senior officials of NMRL and Naval Group France in Mumbai to extend cooperation to enter into the detailed design phase for integration of indigenous AIP in the Kalvari class submarines. "As part of the agreement, Naval Group France will certify the AIP design for integration in the submarines," it added.

The AIP, DRDO said, has a "force multiplier effect" on the lethality of a diesel-electric submarine as it enhances the submerged endurance by several folds. "It has merits in performance compared to other technologies and is unique as the hydrogen is generated onboard. This technology has been successfully developed by NMRL with the support of Indian industry partners," it said, adding that the technology has now reached the stage of maturity for industrialisation. The land-based prototype of the NMRL's AIP has earlier been tested successfully.

"This new endeavour will be a significant step towards the detailed design certification of the energy module, which will be performed by NMRL along with Indian industry and design of the



platforms impacted by the integration of the indigenous AIP inside the Indian submarine by Naval Group,” the DRDO statement added.

The statement quoted Pierre Eric Pommellet, Chairman and CEO, Naval Group France, as saying they are proud to cooperate with Indian stakeholders to safely integrate AIP in the Kalvari class submarines, which have been built by Mazagon Dock Shipbuilders Limited.

This is a natural extension of strategic bilateral cooperation shared between India and France in the field of underwater defence and deterrence and in line with Naval Group’s continued commitment towards the Government’s ‘Aatmanirbhar Bharat’ policy, Pommellet added.

<https://indianexpress.com/article/india/drdo-and-naval-group-france-sign-pact-to-fit-indigenous-aip-system-on-kalvari-class-submarines-8400748/>



*Mon, 23 Jan 2023*

## **DRDO'S Light Tank to be Equipped with Modern Warfare Technologies**

The Zorawar Light Tank that is getting developed by Defence Research and Development Organisation (DRDO) will be equipped with all the modern technologies such as Artificial Intelligence, Drone Integration, a high degree of situational awareness, and amphibious operation capability. Also, it will have a crucial role in defending against enemy gunships. DRDO is putting a lot of effort to avert any major threats and also tackle the upcoming war-related ammunition.

### **Light Tank named after Dogra Army General**

The tank has been named after the legendary erstwhile Dogra Army General who led multiple, victories in Tibet which is now controlled by the Chinese Army.

Usually, high altitude areas, range from 11000-16500 ft. above sea level and are under the grip of extreme weather conditions. The tailor-made light tanks are getting developed with this view only to curb difficulties faced in the operations and sustenance of tracked vehicles in the northeastern borders.

### **Tanks getting developed in collaboration with Larsen & Toubro Limited**

One of the biggest benefits of the light tank is that they are 'air portable' and can conveniently be deployed in critical areas. Combat Vehicles Research and Development Establishment (CVRDE) under the DRDO has been given the responsibility for the development of a light tank in collaboration with the Lead System Integrator (Larsen & Toubro Limited, Mumbai).

The Light tank will have a lot of features such as a high power-to-weight ratio, superior firepower, protection, surveillance, and greater communication capabilities. It will also possess the lethal firepower to defeat the armour of low-flying helicopters.

<https://www.republicworld.com/amp/india-news/general-news/drdo-light-tank-to-be-equipped-with-modern-warfare-technologies-articleshow.html>

Mon, 23 Jan 2023

### पांचवीं पनडुब्बी 'INS वागीर' भारतीय नौसेना में शामिल

कलवरी श्रेणी की पनडुब्बियों की पांचवीं पनडुब्बी 'आईएनएस वागीर' को सोमवार को भारतीय नौसेना में शामिल किया गया, जिससे बल की ताकत और बढ़ेगी। 'आईएनएस वागीर' का निर्माण 'मझगांव डॉक शिपबिल्डर्स लिमिटेड (एमडीएल)' ने फ्रांस के 'मैसर्स नेवल ग्रुप' के सहयोग से किया है। नौसेना अध्यक्ष एडमिरल आर हरि कुमार की उपस्थिति में इसे नौसेना में शामिल किया गया।

भारतीय नौसेना के अनुसार, पनडुब्बी दुश्मन को रोकने की भारतीय नौसेना की क्षमता में इजाफा करके भारत के समुद्री हितों को आगे बढ़ाएगी। यह संकट के समय में निर्णायक वार करने के लिए खुफिया, निगरानी और टोही (आईएसआर) अभियान के संचालन में भी मददगार साबित होगी।" नौसेना के अनुसार, 'वागीर' का अर्थ 'सैंड शार्क' है, जो तत्परता एवं निर्भयता के भाव को प्रतिबिंब करती है।

नौसेना ने कहा कि 'आईएनएस वागीर' दुनिया के कुछ बेहतरीन 'सेंसर' और हथियारों से लैस है, जिसमें 'वायर गाइडेड टॉरपीडो' और सतह से सतह पर मार करने वाली मिसाइलें शामिल हैं, जो दुश्मन के बड़े बेड़े को बेअसर कर सकती हैं। नौसेना के मुताबिक, पनडुब्बी में विशेष अभियानों के लिए समुद्री कमांडो को पानी में उतारने की क्षमता है, जबकि इसके शक्तिशाली डीज़ल इंजन 'बैटरी' को काफी जल्दी चार्ज कर सकते हैं। आत्मरक्षा के लिए इसमें अत्याधुनिक 'टॉरपीडो डिफेंस सिस्टम' लगाया गया है। 'आईएनएस वागीर' को हिंद महासागर में चीनी नौसेना की बढ़ती मौजूदगी के बीच भारतीय नौसेना में शामिल किया गया है।

<https://www.punjabkesari.in/national/news/ins-vagir-kalvari-class-submarines-indian-navy-1757435>



Press Information Bureau  
Government of India

Ministry of Defence

Mon, 23 Jan 2023

### Commissioning of Fifth Kalvari Class Submarine 'Vagir' at Naval Dockyard, Mumbai

- Another major milestone for Indian Navy's Project 75 and Make in India initiative
- INS Vagir would form part of the Western Naval Command

- The submarine has advanced stealth features and long range guided torpedoes as well as anti-ship missiles

Indian Navy's fifth stealth Scorpene class Submarine INS Vagir was commissioned into the Indian Navy today, 23 Jan 2023 at the Naval Dockyard Mumbai in the presence of Adm R Hari Kumar, Chief of the Naval Staff, the Chief Guest for the ceremony. Six Scorpene Class submarines are being built in India by the Mazagon Dock Shipbuilders Limited (MDL) Mumbai, under collaboration with M/s Naval Group, France. INS Vagir would form part of the Western Naval Command's Submarine fleet and would be another potent part of the Command's arsenal.

Vagir was launched on 12 Nov 20, under Project 75 (P75) and was delivered to Indian Navy on 20 Dec 22 post completion of sea trials. Vagir has the distinction of having the lowest build time among all indigenously manufactured submarines till date.

Flag Officer Commanding-in-Chief, Western Naval Command VAdm AB Singh, Chairman & Managing Director, MDL VAdm Narayan Prasad (Retd) and other senior civil & military officials of Ministry of Defence were present during the commissioning ceremony. The crew of the erstwhile 'Vagir', a Russian origin Foxtrot Class Submarine which was decommissioned in 2001 were special invitees for the ceremony and the then commissioning Commanding Officer RAdm K Raja Menon (Retd) was also present.

The Scorpene Submarines are extremely potent platforms, they have advanced stealth features and are also equipped with both long range guided torpedoes as well as anti-ship missiles. These submarine have a state of the art SONAR suite and sensor suite permitting outstanding operational capabilities.

### **CNS Speech**

Speaking on the occasion CNS stated that INS Vagir will give a significant fillip to the Indian Navy's operational might and serve as a potent deterrent for any adversary.

He also highlighted that Vagir is the third submarine inducted into the Navy in a short span of 24 months. "This underscores the coming of age of India's shipbuilding industry, and the maturing of our defence ecosystem. It is also a shining testimony to the expertise and experience of our shipyards to construct complex & complicated platforms and serves to reinforce Indian Navy's unequivocal commitment and steadfast resolve to be a fully 'AatmaNirbhar' force by 2047".

Congratulating the CMD and personnel of Mazagon Dock Shipbuilders Ltd for their commendable efforts which have led up to Vagir's commissioning CNS stated that MDL is a close and valued partner for the Indian Navy & has been at the forefront of Navy's transition from a 'Buyer's Navy' to a 'Builder's Navy'.

The CNS complimented the Commissioning Crew stating that "it gives me every confidence that each one of you will 'do your duty and do it well', and that Vagir will serve the Nation with pride and élan guided by the highest traditions of the Navy".

### **Vagir - Sand Shark**

The Sand Shark represents 'Stealth and Fearlessness', two qualities that are synonymous with the ethos of a submariner. The motto of the submarine, 'Saahas Shaurya Samarpan' epitomizes the core values of Courage, Valour and Dedication. These values reflect in undertaking all operations at its peak efficiency to emerge victorious in all conditions and ability to be synergised when faced with a difficult task. The motto has been imbibed by the men which

inspires them to overcome adversities, to remain confident, bold and brave even in the toughest situations so as to keep the edge ‘Sharp and Ready’.

The induction of Vagir is another step towards the Indian Navy, consolidating its position as a builder’s Navy, as also is a reflection of MDL’s capabilities as a premier ship and submarine building yard of the world. Project – 75 also marks a critical milestone in the Yard’s continued importance in the field of Defence Production.

The commissioning of Vagir is coinciding with ‘Azadi ka Amrit Mahotsav’ celebrations. The commissioning of this indigenous submarine once again denotes the drive and focus towards ‘AatmaNirbhar Bharat’.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1893036>

## **Business Standard**

*Mon, 23 Jan 2023*

### **Fifth Scorpene Submarine INS Vagir Joins the Indian Navy's Fleet**

*By Ajai Shukla*

INS Vagir, the fifth of six Scorpene (Scorpion in French) submarines being built by Mazagon Docks (MDL), Mumbai, was commissioned into the Indian Navy on Monday in the presence of the Chief of Naval Staff, Admiral R Hari Kumar. Project 75 is the Ministry of Defence’s (MoD’s) code-name for the construction of six Scorpene submarines in MDL with technology supplied by French shipbuilders, Naval Group (earlier DCNS). Project 75 delivered its first submarine, INS Kalvari, in December 2017.

That was followed by four more boats (as the Navy refers to submarines), called the Kalvari-class after the lead vessel. These included INS Khanderi (commissioned in September 2019), INS Karanj (March 2021), INS Vela (November 2021), and INS Vagir (January 2021).

The sixth and last Project 75 submarine, INS Vagsheer, is currently completing her sea trials in order to be delivered in 2024, says the MoD.

That will take up to 18 the number of Indian Navy submarines. These include eight Russian-origin Kilo-class, four German origin HDW submarines, and six Scorpenes. There is also one Amur class, nuclear-propelled vessel, taken from Russia on lease.

Project 75 was intended to be followed by Project 75-India, which involved the building of six more submarines in India, with “air independent propulsion” (AIP) technology provided by a chosen global shipbuilder. However, there has been slow progress on Project 75-India and a contract seems years away.

According to the MoD’s 30-year submarine building programme, the 12 submarines acquired under Project 75 and Project 75-India are to be followed by an indigenous project to build 12 more conventional AIP submarines. There has been no progress on this either.

In parallel to the construction of these 24 submarines, there is a project for the Defence R&D Organisation to build six nuclear propelled, conventionally armed attack submarines (SSNs). This, too, is languishing. However, the MoD and the shipbuilders appear optimistic.

“The commissioning of INS Vagir highlights the success of the indigenous submarines construction programme of the Centre. This submarine has been completely built by MDL having successfully absorbed the technology transfer from Naval Group, in line with government’s ‘Make in India’ policy,” said Laurent Espinasse of Naval Group.

“The six (Scorpene) submarines are fitted with equipment built in India by qualified and highly trained industrial micro, small, and medium enterprises (MSMEs). MDL and Naval Group have developed a rich industrial ecosystem of more than 50 Indian companies, along with an Indian subsidiary with more than 70 Indian engineers to support the Indian Navy, thus contributing to industrial and technological sovereignty,” stated Naval Group.

The Scorpene is a 2,000-tonne, conventional-propulsion, stealthy and high-performance submarine, which Naval Group has optimised for anti-surface vessel warfare, anti-submarine warfare, long-range strikes, special operations and intelligence gathering.

Stealthy and fast, its high level of automation allows it to be operated by a limited number of crew, which reduces its operating costs significantly. Its combat edge is provided by six weapon launching tubes and 18 weapons, including torpedoes and missiles.

When the Vagsheer is delivered, there will be 14 Scorpene submarines in service in four navies: two each in Chile and Malaysia, four in Brazil, and six in India. In addition to these, potential buyers include the Philippines, Indonesia, and Romania.

[https://www.business-standard.com/article/economy-policy/ins-vagir-the-fifth-scorpene-submarine-joins-indian-navy-s-fleet-123012301003\\_1.html](https://www.business-standard.com/article/economy-policy/ins-vagir-the-fifth-scorpene-submarine-joins-indian-navy-s-fleet-123012301003_1.html)



*Tue, 24 Jan 2023*

## **INS Vagir Inducted into Navy: Stealth-Class Submarine will Serve as Potent Deterrent for Adversaries, Says Chief**

INS Vagir, the fifth stealth Scorpene-class Submarine, was commissioned into the Navy on Monday, making it the third submarine inducted into the Navy in 24 months and the 17th one to be in service with the Navy.

The commissioning ceremony took place at the Naval Dockyard in Mumbai. Navy Chief Adm R Hari Kumar was chief guest for the ceremony.

Six Scorpene Class submarines are being built in India by Mazagon Dock Shipbuilders Limited (MDL), Mumbai, under collaboration with M/s Naval Group, France, under a technology transfer agreement.

As per the Navy, INS Vagir will form part of the Western Naval Command’s submarine fleet and will be another potent part of the Command’s arsenal.

In a separate statement, the Naval Group on Monday said the sixth and last Scorpene-class submarine is undergoing sea trials at present and will be delivered to the Navy next year. INS Vagir will join INS Kalvari, INS Khanderi, INS Karanj and INS Vela, which had already been commissioned, respectively, in December 2017, September 2019, March 2021 and November 2021.

Vagir was launched on November 12, 2020, under Project 75 (P75) and was delivered to Navy on December 20 last year after completion of sea trials. She has the lowest build time among all indigenously built submarines till date. The Scorpene Submarines have advanced stealth features and are also equipped with both long-range guided torpedoes and anti-ship missiles. It has six weapon launching tubes and 18 weapons. With the latest induction, India now has 16 conventional submarines and a nuclear submarine, INS Arihant.

Speaking on the occasion, Admiral Kumar said INS Vagir will give a significant fillip to the Navy's operational might and serve as a potent deterrent for any adversary. He said commissioning of Vagir reflects the coming of age of India's shipbuilding industry, and the maturing of the country's defence ecosystem. "It is also a shining testimony to the expertise and experience of our shipyards to construct complex and complicated platforms and serves to reinforce Indian Navy's unequivocal commitment and steadfast resolve to be a fully 'AatmaNirbhar' force by 2047," he said.

<https://indianexpress.com/article/india/ins-vagir-inducted-into-navy-stealth-class-submarine-will-serve-as-potent-deterrent-for-adversaries-says-chief-8400301/>

## THE ECONOMIC TIMES

Mon, 23 Jan 2023

### **INS Vagir: Here's All You Should Know About India's New Attack Submarine**

In a major boost to Indian naval power, the Indian Navy today received the fifth submarine of the Kalvari Class submarines, INS Vagir. The submarine has been built under Project-75, which includes the indigenous construction of six submarines of Scorpene design.

The submarine can undertake diverse missions including anti-surface warfare, anti-submarine warfare, intelligence gathering, mine laying, and surveillance missions.

The commissioning of INS Vagir comes amid the increasing presence of the Chinese Navy in the Indian Ocean.

#### **Here is all you should know about INS Vagir:**

- INS Vagir is built by Mazagon Dock Shipbuilders with the help of technology transfer from France's Naval Group.
- 'Vagir' means sand shark, which represents stealth and fearlessness, two qualities synonymous with the ethos of a submariner.
- The erstwhile 'Vagir' was commissioned on November 1, 1973, and undertook numerous operational missions including deterrent patrols.

- The submarine was decommissioned on January 7, 2001, after serving the nation for about three decades.
- Launched and named 'Vagir' on November 12, 2020, the submarine in its new avatar has the distinction of having the lowest build time among all indigenously manufactured submarines to date.
- New Vagir has the distinction of having the lowest build time among all indigenously manufactured submarines till date. \* The four Kalvari-class submarines commissioned earlier are: INS Kalvari, INS Khanderi, INS Karanj and INS Vela.
- INS Vagsheer will be the last one in the series to be commissioned, expected around March 2024.
- The submarine has the best sensors in the world, its weapons package include sufficient wire guided torpedoes and sub-surface to surface missiles to neutralise a large enemy fleet. \* The submarine can also launch marine commandos for special operations, while its powerful diesel engines can quickly charge batteries for a stealth mission.
- For self defence, it has a state of the art torpedo decoy system.

[https://m.economicstimes.com/news/defence/two-ieds-destroyed-in-jammu-kashmirs-rajouri/amp\\_article/show/97241977.cms](https://m.economicstimes.com/news/defence/two-ieds-destroyed-in-jammu-kashmirs-rajouri/amp_article/show/97241977.cms)



*Tue, 24 Jan 2023*

## **Indigenous Equipment Set to be in Focus at Republic Day Parade**

The military gear that will feature in India's biggest ceremonial event will include main battle tank Arjun Mk-1, quick reaction fighting vehicles, K-9 Vajra self-propelled guns, Akash missile systems and Nag missile system. All army equipment to be showcased during the 74th Republic Day parade on Kartavya Path will be indigenous, reflecting the country's focus on boosting atmanirbharta (self-reliance) in the defence manufacturing sector, said Major General Bhavnish Kumar, Chief of Staff, HQs Delhi Area, who will be the second-in-command of the parade.

The military gear that will feature in India's biggest ceremonial event will include main battle tank Arjun Mk-1, quick reaction fighting vehicles, K-9 Vajra self-propelled guns, Akash missile systems and Nag missile system, he said. Lieutenant General Dhiraj Seth, General Officer Commanding, HQs Delhi Area, will be the parade commander.

An indigenous artillery gun - the Indian Field Gun - will be deployed for the ceremonial 21-gun salute, Kumar said, briefing reporters about the final line up of the parade after the full dress rehearsal.

The army fly past will involve two indigenous Dhruv advanced light helicopters (ALH) and two ALH weapon system integrated Rudra choppers, Kumar said. The parade will include a mounted column of 61 Cavalry, nine mechanised columns, six marching contingents, and three Param Vir Chakra and three Ashok Chakra awardees, he said.

As Egypt's President Abdel Fattah al-Sisi will be the chief guest at the Republic Day celebrations, a 144-member marching contingent of that country will also take part in the parade. The members of the Egyptian marching contingent have been drawn from the army, air force, navy and air defence forces, Kumar said. This will be the fourth time that foreign soldiers are taking part in the Republic Day parade.

A French army contingent of 130 soldiers took part in the parade for the first time in 2016. Then French President Francois Hollande was the chief guest that year. A United Arab Emirates contingent took part in the parade in 2017 when the chief guest was from that country. A marching contingent of the Bangladesh army took part in the 2021 parade. The Bangladeshi contingent was invited at a time when the two countries were celebrating the golden jubilee of the birth of Bangladesh.

One of the highlights of the parade last year was the display of modern army weaponry alongside vintage equipment. The weapons showcased in 2022 included the surface-to-air Akash missile system, main battle tank Arjun, BMP-II infantry combat vehicles and Dhanush artillery guns, with the PT-76 and Centurion tanks, OT-62 Topas armoured personnel carrier, 75/24 towed gun and the Tiger Cat missile system offering a refreshing throwback to the 1960s and 1970s.

Before the parade begins, Prime Minister Narendra Modi will lead the country in paying tribute to India's fallen braves at the National War Memorial, a monument dedicated to soldiers killed in post-Independence wars and operations.

The parade will last 90 minutes. It will feature a total of 16 marching contingents, including those from the armed forces, 19 bands and 27 tableaux, officials said. For the first time, women will form part of the Border Security Force camel contingent, they added, declining to be named. Three women officers will also form part of the army contingent at the parade.

The Indian Air Force fly past, one of the highlights of the parade, will feature 45 aircraft, including Rafales, Sukhoi-30s, Jaguars, C-130J special operations aircraft and Apache attack helicopters.

<https://www.hindustantimes.com/india-news/indigenous-equipment-set-to-be-in-focus-at-republic-day-parade-101674500342893.html>



*Mon, 23 Jan 2023*

## **India's First Personal Aerial Vehicle – Varuna will be Showcased on Jan 26 this Year**

As the world is witnessing a revolution in new-age mobility where unmanned autonomous vehicles are the need of the hour to strengthen air, terrestrial and maritime security, Sagar Defence Engineering has made its primary goal to utilise this indigenously autonomous technology to provide expeditious solutions.



In the rear section of the Naval Tableau this year three models of autonomous unmanned systems being developed indigenously under IDEX-Sprint Challenge are displayed. And one of them is the model of an unmanned personal aerial vehicle, “Varuna.

The tableau is designed with an aim to showcase the multi-dimensional capabilities of the navy and to also highlight indigenously designed and built inductions under mission ‘AatmaNirbhar Bharat’. The Sprint initiative was launched by Prime Minister Narendra Modi during the Naval Innovation and Indignation Organisation Seminar last July. These products are being developed under the innovation for defence excellence scheme of the Ministry of Defence and Technology Development Acceleration Cell of Indian Navy.

### **Sagar Defence Engineering says:**

“To facilitate the transition to this new era of unlimited urban movement, we have entirely conceived and constructed India’s first unmanned personal aerial vehicle, “Varuna,” as a representation of state-of-the-art autonomous aerial mobility,” Capt Nikunj Parashar, Managing Director and founder Sagar Defence Engineering told Financial Express Online.

### **About Varuna**

Varuna is India’s maiden human-carrying all electric autonomous platform built and manufactured indigenously, with the aim to revitalize urban air mobility by delivering on-demand aviation services. With the innovative technology of vertical take-off and landing (VTOL), electric propulsion, and automated air traffic management, a person can use this unique vehicle from their doorsteps to any destination they want, especially in emergency situations and rescue operations.

The company, according to Capt Parashar has thus far concentrated on developing AI-enabled solutions to address growing security, logistical, and urban air mobility concerns in a constantly evolving environment. After years of intense research and development, Varuna is specifically made for autonomous takeoff and landing even on moving platforms.

“We aim to leverage the sky and use Urban Air Mobility to better link people to cities and regions, giving them more possibilities to connect faster and save some time for their loved ones by adding a few more minutes in their day today lives. And are looking at the development of Varuna, where the military will be the initial early adopters and use the technology first for the transfer of cargo and personnel between warships to cut down on time, expense, and the risk to human life before applying the same principles to upcoming urban air mobility.”

Varuna eliminates not just the dangers associated with low visibility accurate landings but also deck preparation in such operations. Rapid response is crucial in such missions since they frequently include life-threatening scenarios that call for quick action to preserve lives.

In disaster relief situations and medical emergencies, when traditional support is not feasible due to difficult terrain or time constraints, Varuna makes it apt for providing emergency supplies and evacuations.

By using highly automated personal aerial vehicles (PAVs) that operate in urban and suburban areas at lower altitudes and transport passengers and cargo in a secure and efficient manner, the company hopes to revolutionise urban air mobility.

“The PAV, which can be used as an Air Taxi as well, adopts a complete strategy to promote human connectivity by giving people the safety and comfort of flying anytime anywhere. And

we also take into account structural development, community involvement, operational framework, and the advancement and safety concerns of the PAV,” he explains.

### **Has it been demonstrated anywhere beyond?**

Yes. The company has demonstrated Varuna on various national and international platforms to delegates in the defence industry.

Last year during the Swavlamban 2022 summit which was organized by NIIO, TDAC and the Indian Navy in New Delhi, Sagar Defence had showcased this drone in front of Prime Minister, Narendra Modi, defence Minister Rajnath Singh, and the Chief of Naval Staff Admiral R Hari Kumar.

Also, the company made a presentation about PAV to the Deputy Prime Minister of Australia, Richard Marles and the High Commissioner to India, Barry O’Farrell at INS Hansa in Goa.

Vice Admiral Satish Namdeo Ghormade, Vice Chief of the Naval Staff (VCNS), and delegates from the Indian Navy to the production and R&D facility at Sagar Defence Engineering in Pune to demonstrate the holistic development of the PAV.

<https://www.financialexpress.com/defence/indias-first-personal-aerial-vehicle-varuna-will-be-showcased-on-jan-26-this-year/2957700>



*Tue, 24 Jan 2023*

## **Army Chief Visits Forward Posts at LAC**

After Indian and Chinese troops clashed at Tawang in Arunachal Pradesh on December 9 last year, Army Chief General Manoj Pande for the first time visited the state on Sunday to review the operational readiness of the armed forces to meet any challenge.

Giving details of Pande’s visit to the sensitive region, officials said on Monday he carried out a comprehensive review of India's military preparedness along the Line of Actual Control (LAC) in Arunachal Pradesh.

The Army chief visited various forward posts along the de-facto border with China in the Rest of Arunachal Pradesh (RALP) as well as some other strategically key posts during his visit. Senior commanders there briefed the army chief about the overall security scenario in the border areas. "Gen Manoj Pande #COAS visited units and formations along LAC in Eastern #ArunachalPradesh and was briefed on operational preparedness and security situation. #COAS complimented troops for maintaining sharp vigil & exhorted all to continue working with same zeal & devotion," the Army tweeted.

On Saturday, Pande reviewed the Army's military preparedness along the LAC in Arunachal Pradesh and Sikkim during his visit to the headquarters of the eastern Army command in Kolkata. Pande's tour to the crucial command came six weeks after the clash between Indian and Chinese troops in an area along the LAC in the Tawang sector of Arunachal Pradesh. The Eastern Command takes care of the LAC in the Arunachal Pradesh and Sikkim sectors.

There has been a fresh spike in tensions between India and China after troops from the two sides were engaged in the clash along the LAC at Yangtse in the Tawang sector on December 9.

Defence Minister Rajnath Singh said in Parliament on December 13 the Chinese troops tried to "unilaterally" change the status quo in the Yangtse area but the Indian Army compelled them to retreat by its firm and resolute response.

On January 12, Pande said the situation along the frontier with China is "stable" but "unpredictable" and Indian troops are adequately deployed to deal with any contingencies. He also said there was a slight increase in the number of Chinese troops in their areas across the eastern sector. "But we are keeping a close watch on the movements and activities there," he said.

Besides eastern Ladakh, the Indian Army has been also focusing on enhancing infrastructure along the LAC in Arunachal Pradesh and Sikkim. Following the eastern Ladakh standoff, the Indian Army significantly strengthened its operational capabilities along the LAC in the eastern theatre as well.

The Army put into place an effective surveillance apparatus and there has been a substantial improvement in overall monitoring of the areas in the last two years, military officials said. From the construction of roads, bridges and ammunition depots to bolstering its surveillance apparatus, the Army is ramping up military infrastructure at a rapid pace for quicker mobilisation of troops in the region. The Indian and Chinese troops are locked in an over 32-month standoff in several areas along the LAC in eastern Ladakh. India has all along maintained ties with China cannot be normal unless there is peace in the border areas.

The eastern Ladakh border standoff erupted on May 5, 2020, following a violent clash in the Pangong lake area. The relations between the two countries nosedived significantly following the fierce clash in the Galwan Valley in June 2020 that marked the most serious military conflict between the two sides in decades.

As a result of a series of military and diplomatic talks, the two sides completed the disengagement process on the north and south banks of the Pangong lake and in the Gogra area. In September last, the Indian and Chinese militaries carried out disengagement from the Patrolling Point 15 in the Gogra-Hotsprings area.

<https://www.dailypioneer.com/2023/india/army-chief-visits-forward-posts-at-lac.html>



*Tue, 24 Jan 2023*

## **Why are Andaman and Nicobar Islands a key Indian Military Asset?**

*By Shishir Gupta*

Even though Atal Bihari Vajpayee government created Andaman and Nicobar Command at Port Blair in 2001, the tri-service institution has not lived up to national vision with three services still operating in silos and are wary of committing additional military assets to counter Chinese challenge in the Indo-Pacific. Prime Minister Narendra Modi made 21 Param Vir Chakra (PVC)

award winners as sentinels of India's naval frontiers by naming islands in Andaman and Nicobar after the bravest of the braves. By honoring Netaji Subhash Chandra Bose, whose Azad Hind Fauj or INA suffered maximum attrition at the hands of the Imperial British, and the PVC winners, PM Modi has raised the morale of the Indian military to the next level of national consciousness.

CDS Gen Anil Chauhan visited Andaman and Nicobar islands and paid homage to Netaji on his 126th birth anniversary. He also visited Campbell Bay, Air Force Station Carnic and Indira Point, Southernmost tip of India spanning the six-degree channel.

While Home Minister Amit Shah at Port Blair on Monday announced that the Modi government was committed to develop the island chain, the government needs to rapidly translate this into action and make Andaman and Nicobar Islands a strategic military asset of the Indo-Pacific. The tri-service Andaman and Nicobar Command, created by Atal Bihari Vajpayee government in 2001, must live up to the vision for which it was created in the first place.

The Island chain sits on the mouth of Malacca Straits and Ten Degree Channel, through which trillion-US dollar worth trade passes through to southeast and north Asia, bisects little Andaman and Car Nicobar Islands. The southernmost tip of the island chain is mere 237 kilometers from Banda Aceh of Indonesia and hence dominates the sea lanes to Sunda and Lombok Straits, the two ingress routes into contested South China Sea.

Given that the islands chain is a key strategic lever in the Indo-Pacific, the Modi government needs to dust up the 15-year plan to make a container terminal at Campbell Bay for replenishment of cargo ships bound for straits of Malacca. Today, the same cargo ships must wait at Colombo port for their turn to enter Malacca Straits. This was also the vision of India's first Chief of Defence Staff Gen Bipin Rawat.

Although the tri-service command has been created at Port Blair, the runways at INS Kohassa in North Andaman and INS Baaz in Great Nicobar need to be extended to Indian Navy's anti-submarine and reconnaissance P 8 I to operate in the region. A jetty to handle the Indian Navy's two aircraft carriers needs to be constructed at Campbell Bay if India plans to counter the Chinese challenge in the Indo-Pacific. The three services must work in total synergy not in silos as they often do with superseded officers often posted to these islands as their last posting before superannuation.

While Su-30 MKI fighters land at INS Utkrosh at Port Blair as part of forward deployment, fighter operations from INS Baaz will change the complexion of the game in South China Sea as it would expand the military footprint of India into Southeast Asia and beyond.

Besides being a military asset, the island chain provides maximum opportunities for eco-tourism and sea sports while keeping tribal areas out of bounds for the visitors. For that, the islands must have its own power generation units and not depend on diesel generators.

The development of Andaman and Nicobar Islands should match the strides of rising India as it will send a signal to not only the Indian sub-continent but reverberate around the globe.

<https://www.hindustantimes.com/india-news/why-are-andaman-and-nicobar-islands-a-key-indian-military-asset-101674528554860-amp.html>

## **China Wants to Reduce India's Influence in Indian Ocean Region, Say Papers Submitted at DGPS' Meet**

Chinese activities and influence in India's extended neighbourhood have grown increasingly with the sole purpose of keeping New Delhi constrained and occupied in facing the resultant challenges, according to papers submitted at a key security meet here. The papers presented by Indian Police Service officers at the just concluded conference of DGPs and IGP's submit that by providing huge amounts of money in the name of loans for developmental works in Southeast and South Asia, China wants to reduce India's influence in the Indian Ocean region and force resolution of bilateral issues on Beijing's terms.

The three-day annual conference was attended by Prime Minister Narendra Modi, Union Home Minister Amit Shah, National Security Adviser Ajit Doval and about 350 top police officers of the country.

China's Belt and Road Initiative (BRI), China-Pakistan Economic Corridor (CPEC), infrastructure related investments in India's neighbouring countries through easy loans, hot borders and Line of Actual Control (LAC) are some of the tools Beijing has been using effectively, the papers say. The last two-and-a-half-decades have seen Chinese economic and military growth at a massive scale and Chinese activities and influence in India's extended neighbourhood have grown proportionately, they find. "All this is being done with the aim to keep India constrained and occupied in facing the resultant challenges, force resolution of bilateral issues on its own terms, modulate India's growth story, leaving it (China) free to achieve its aim of becoming not only Asia's pre-eminent power, but a global superpower," according to the papers.

The papers on the subject "Chinese influence in the neighbourhood and implications for India" were written by some top IPS officers of the country. China has become far more attentive to its South Asian periphery, moving beyond commercial and development engagements to more far-reaching political and security ones, according to one of the papers.

China is investing huge amounts of money in the neighbouring countries of India mainly Pakistan, Nepal, Bangladesh, Myanmar and Sri Lanka in the name of infrastructure development and other financial assistance, it said. Without exception, India's neighbouring countries have described China as a crucial development partner, either as a funder or in providing technological and logistical support. Additionally, it is the biggest trading partner in goods for Bangladesh and Sri Lanka, and the second-largest for Nepal and the Maldives, it said.

"However, the economic element is increasingly intertwined with political, government, and people-to-people aspects of these relationships," it said. The COVID-19 pandemic has created opportunities for China to work directly with these countries in new ways such as the provision of medical equipment, biomedical expertise, and capital for coronavirus-related needs, it said.

These developments demonstrate that China's presence in Southeast and South Asia is no longer predominantly economic but involves a greater, multidimensional effort to enhance its posture

and further its long-term strategic interests in the region, the paper said. "China is highly ambitious about achieving its regional power status in the Indian Ocean region. To do so Beijing wants to contain India which is the only threat before China in this region," according to an analyst.

[https://m.economictimes.com/news/defence/china-wants-to-reduce-indias-influence-in-indian-ocean-region-say-papers-submitted-at-dgps-meet/amp\\_articleshow/97244096.cms](https://m.economictimes.com/news/defence/china-wants-to-reduce-indias-influence-in-indian-ocean-region-say-papers-submitted-at-dgps-meet/amp_articleshow/97244096.cms)

# The Tribune

Tue, 24 Jan 2023

## Why China is Forced to Improve Ties with US

*By Yogesh Gupta*

During the last three months, the image and standing of Chinese President Xi Jinping have weakened with widespread protests breaking out in November against his zero-Covid policy, after which he was forced to abandon it, resulting in waves of Covid-19 infections rampaging China.

Xi was forced to acknowledge popular criticism of his zero-Covid policy in his New Year address when he said, "In a big country, it is natural for different people to hold different views on the same issue."

With the majority of the population getting infected due to Covid, deaths of a large number of elderly and other persons, losses suffered by middle-class people due to defaults by many property companies, and loss of jobs due to the closure of several companies, the discontent against Xi's governance has risen considerably.

As the maintenance of domestic peace, stability and order is of the highest priority for him and the Chinese Communist Party's (CCP) rule in the country, Xi has gotten hyperactive to thwart the criticism of his policies.

Reaching out to the USA and others in his New Year address, Xi avoided his pet word "reunification" of Taiwan with Mainland China and said, "The people on both sides of the Taiwan Strait are members of one family" and hoped that they would work together with "a unity of purpose to jointly foster lasting prosperity of the Chinese nation."

Talking to different groups at home, Xi defended his zero-Covid policy, saying that it had "enabled China to withstand several rounds of virus mutations", lowered the proportion of severe cases and the fatality rate to the greatest extent possible. Asking for more patience and forbearance as Covid wades through the rural areas, Xi said, "Tough challenges remain, but the light of hope is right in front of us. Perseverance means victory."

Bad news for Xi continued as China's National Bureau of Statistics announced on January 17 that the country's population had fallen by

8.5 lakh in 2022. This was the first decline after 1961 when China's population had fallen due to Mao Zedong's Great Leap Forward industrial policy failing because of floods and drought.

China's population is shrinking as the country's rulers decided to follow the single-child policy in 1979 to overcome its vast poverty quickly without studying the long-term implications of the move.

According to Professor Yi Fuxian, a researcher based in the USA, China's fertility rate has fallen to 1.3 per cent (the replacement rate for population is 2.1 per cent) and if the country can stabilise its fertility rate at 1.2 per cent, China's population would drop to 1.07 billion in 2050 and 480 million by 2100. A declining population means a smaller workforce, older people with health and social welfare needs, reduced savings, manufacturing, exports and revenues for the government, weaker consumption and lower economic growth.

China has unveiled plans to introduce more robots and automation in manufacturing, agriculture, logistics, healthcare, energy and other sectors but the impact of this measure would be limited as the country already has 322 robots per 10,000 people, surpassing the USA and putting it in the fifth place in 2021, according to the World Robotics Report, 2022.

The other news which would have upset Xi includes continued sanctions being imposed by the USA and its allies on the export of microchips to about 100 Chinese companies which would retard China's progress in the strategic domain, besides the decision of the Japanese government to term China as an "unprecedented strategic challenge" and increase its defence spending to 2 per cent of its GDP by 2027. Japan is to acquire counterstrike capabilities (aimed mainly against China and North Korea), including new missiles, technologies relating to unmanned systems, cyberspace, outer space, the electromagnetic spectrum and artificial intelligence.

The news about the rising India — the projections of Ernst and Young that the Indian economy could reach \$26 trillion by 2046 and the decision of Apple to shift about 25 per cent of American cell phone manufacturing from China to India by 2025 — would not have pleased Xi as China has always aimed at containing India's progress to assert its supremacy in the region. Xi would view it as another example of the Indo-US collusion aimed at weakening China's economic power.

Xi has taken several steps to signal improved relations with the USA. Firstly, by lowering the rhetoric aimed against Washington and giving his concurrence for a meeting of the ministers in charge of foreign affairs, national security, finance, climate change and others. His ministers have put aside their wolf-warrior diplomacy and are now seeking meetings with their American counterparts. China is seeking stronger ties with Germany, France and Italy as these countries are taking a stance more independent of the USA towards China.

To signal the change and openness to global investment and market reforms, Xi sent Liu He, a vice-premier and his old Economic Adviser whom he had removed from the Politburo at the 20th Party Congress in October 2022, to represent China at the World Economic Forum in Davos as he is well known to big western companies.

At home, Xi has changed his earlier policies on the regulation of technology companies and tightening of credit to the real estate companies. Xi and his ministers are inviting foreign investors again to China, promising equal support to the private sector and more market reforms.

But the trust, outlook and confidence of the USA, many European, Asian and other countries and companies in Xi have been badly shaken due to his erratic and misguided policies. They think that the change in Xi's approach and about-turn in policies is only tactical to ride out the present

difficult economic environment. They would continue to put pressure on China to weaken its economic growth and hamper its technological rise to resist Xi's aggression and hegemony.

<https://www.tribuneindia.com/news/comment/why-china-is-forced-to-improve-ties-with-us-473095>



*Mon, 23 Jan 2023*

## **Taiwan Again Detects Chinese Aircraft and Vessels Near Island, Defence Ministry on Alert**

The tensions between China and Taiwan experienced an unsettling rise in the early hours of Monday when Taiwan's defence ministry detected multiple vessels and aircraft of the Chinese military near Taiwanese waters and fly zones. Sharing the update on Twitter, the ministry said that '9 PLA aircraft and 4 PLAN vessels around Taiwan were detected by 6 a.m.(UTC+8) today.'

'R.O.C. Armed Forces have monitored the situation and tasked CAP aircraft, Navy vessels, and land-based missile systems to respond these activities,' it added. According to Fox News, this is the third week in a row that China has reportedly sent its vessels and aircraft to Taiwanese waters and airspace which have sometimes gone over the median line of the Taiwan Strait.

Chinese aircraft and vessels detected in near Taiwan over the past few days

Taiwan's defense ministry has repeatedly shared information about the incursions over the past few days. Earlier on Sunday, it said on Twitter that 10 aircraft of the People's Liberation Army and 4 vessels of the People's Liberation Army Navy were recognized near Taiwan. On Friday, 14 PLA aircraft and 3 PLAN vessels were detected.

Before that, Taiwanese officials reported detecting 31 PLA aircraft and four PLAN vessels in the area, with the Ministry of Defense stating that 12 of the aircraft crossed over the median line of the Taiwan Strait. The conflict between Taiwan and China continues to rise, with Beijing threatening foreign officials last week that they are 'playing with fire' by interacting with Taiwan.

Ma Xiaoguang, a spokesperson for China's Taiwan affairs office, said at a news conference: "Beijing has resolved in the new year to safeguard its sovereignty and territorial integrity as well as smash plots for the independence of the island. The malicious support for Taiwan independence among anti-China elements in a few foreign countries is a deliberate provocation.'

<https://www.republicworld.com/amp/world-news/rest-of-the-world-news/taiwan-again-detects-chinese-aircraft-and-vessels-near-island-defence-ministry-on-alert-articleshow.html>



## Poland Pushes for More Tanks for Kyiv, Will Seek German Ok

Poland said Monday it would ask Berlin for permission to send German-built Leopard tanks to Ukraine as the government in Warsaw pushes its Western allies to move faster on supplying Kyiv with more military hardware to thwart Russia's invasion.

Germany has hesitated over sending tanks to Ukraine. But Polish officials took heart from remarks Sunday by German Foreign Minister Annalena Baerbock that Berlin wouldn't seek to stop Poland from providing Leopard 2 battle tanks to Ukraine. Polish Prime Minister Mateusz Morawiecki didn't specify when the request to Germany will be made. He said that Poland is building a coalition of nations ready to send Leopard 2 battle tanks to Ukraine.

Poland needs the consent of Germany, which builds the tanks, to send them to a non-NATO country. But even if there is no permission from Germany, Warsaw will make its own decisions, Morawiecki said at a news conference. Poland has become a leading advocate in the European Union for giving Ukraine the military aid that could help it prevail over the Kremlin's invading forces 11 months after the war began. Germany's hesitation has drawn criticism, particularly from Poland and the Baltic countries on NATO's eastern flank that feel especially threatened by Russia's renewed aggression.

Although Berlin has provided substantial aid, it has been criticized for dragging its feet on providing military hardware. German government spokesman Steffen Hebestreit said it was important for Germany not to take a "reckless" step it might regret, adding that a decision will not be rushed. "These are hard questions of life and death," he added. "We have to ask what this means for the defense of our own country."

Pressed on how long a decision on sending tanks might take, Hebestreit said: "I assume that it's not a question of months now." The Ukrainian government says that tanks, and especially the Leopards, are vital to Kyiv.

Previously, Polish officials have indicated that Finland and Denmark were ready to join Warsaw in sending Leopards to Ukraine. The United Kingdom has pledged to send some of its Challenger tanks. French President Emmanuel Macron said Sunday he doesn't rule out sending Leclerc battle tanks to Ukraine and had asked his defense minister to "work on" the idea.

But Macron said a decision hinged on three criteria that have also weighed on the minds of other Western leaders: that sharing the equipment doesn't lead to an escalation of the conflict; that it would provide efficient and workable help when training time is taken into account; and that it wouldn't weaken his own military. Morawiecki said that while Poland intends to ask Germany for permission to send Leopard tanks to Ukraine, the request is "a secondary matter" as a group of EU countries look at how to help Kyiv.

<https://www.dailypioneer.com/2023/world/poland-pushes-for-more-tanks-for-kyiv--will-seek-german-ok.html>

## Why Iran's Drone Programme is a 'Triumph' – Harsh Sanctions, Western Components & Simple Designs

Eleven months into the invasion, the Biden administration is scrambling to prevent Iran from supplying drones to Russia after witnessing the extent to which the Iranian Shahed-136 drones — also called “lawn mowers” or “mopeds” — wreaked havoc in war-torn Ukraine.

The war has shown how, with their precision strike capabilities, cheap drones, especially the ones like the Iran-made Shahed-136, have democratised the modern battlefield.

It is not as if drones have brought in precision strikes for the first time. Precision strike capability has always been the focus of the military. But it comes at a huge cost.

For instance, precision-guided munitions accounted for 8 per cent of total munitions used by US-led coalition forces against the Saddam Hussein regime in the first Gulf War (1991). But their share in the total cost incurred on munitions by the US-led coalition was approximately 84 per cent.

One of the mainstays of precision strike missiles with the US military is the 1,300 kg Tomahawk subsonic cruise missile that costs about USD 2 million a piece at current prices, according to the London-based security and international affairs think tank Royal United Services Institute (RUSI). Washington-based think tank Carnegie Endowment for International Peace notes

that though it is cheap, Iran's Shahed-136 drone retains important capabilities, including the ability to evade radar detection and to operate at a range of up to 1,500 miles. By comparison, Ukraine's US-supplied single-use Switchblade drones only operate in the range of 25 miles.

The success of Iran's drone programme in the face of heavy sanctions is a lesson for India's defence and security establishment, especially the Defence Research and Development Organisation (DRDO) which has been struggling with its Unmanned Aerial Vehicle (UAV) programme for decades.

India's Comptroller and Auditor General (CAG) had in 2020 slammed DRDO's UAV programme for poor planning, keeping end users in dark and flouting standard operating procedures.

### Conception of Iran's drone programme

Treated as a pariah by the West, Iran claims to have drones with the ability to deliver precision-guided missiles in a whopping range of 2,000 km, besides flight endurance of over 24 hours and stealth capabilities.

The US-based bipartisan non-profit United Against Nuclear Iran (UANI) notes that while Tehran's technological prowess is often exaggerated for propagandistic purposes, the success of its drone programme represents a technological triumph for the Islamic Republic.

Washington severed military and diplomatic relations with Tehran after the Iranian revolution in 1979 led to the ouster of the US-backed Shah of Iran, and the subsequent foundation of the Islamic Republic of Iran.

The Iranian drone programme began in the 1980s and it has advanced its military UAV program, seeking to improve its fleets' intelligence, surveillance, and reconnaissance capabilities and to field UAVs able to carry out airstrikes.

Iran has unveiled numerous new drone systems just over the last decade, many of which have been used in combat, demonstrating Tehran's advancements in the UAV space, UANI notes.

Tehran's focus on drones came about as it was looking for ways to monitor and harass ships in the Persian Gulf.

In 1985, the Iranian military set up the Quds Aviation Industry Company as a wing of its Self-Sufficiency Organization. Later that year, it tested its first UAV, Mohajer-1, which demonstrated its usefulness during the Iran-Iraq war (1980-1988).

A predecessor to one of the drones Tehran is now supplying to Russia, the Mohajer-1 was crudely designed and came fitted with a single oblique camera on its nose. It is understood that this was a still camera and its film was developed only upon recovery.

This drone was used in the later stages of the war to photograph Iraqi infantry positions in preparation for offensives and to yield intelligence that would prevent Iranian troops from walking into ambushes, UANI notes.

Tehran also reportedly attempted to outfit these drones with rocket-propelled grenade (RPG) launchers under each wing, but it is unclear whether its attempts ever bore fruit.

Beginning in the 1990s, Iran developed several new variants of the Mohajer, the latest being the Mohajer-6. Every single variant boasted increased range and flight endurance, besides more precise strike capabilities.

In the mid-2000s, Iran also shifted its focus on building attack drones and now has a full-fledged array of such UAVs.

Karrar, unveiled in 2010, was the first such attack drone. Iranian state media declared then that it had "different capabilities, including carrying bombs to destroy targets" and could fly for a "long-range at high speed".

Two years later, in September 2012, Iran unveiled the Shahed-129 — a significant step forward in Tehran's efforts to develop a strike-capable UAV.

It is believed that the new drone was developed by reverse engineering an American RQ-170 UAV which flew over Iran to map the hundreds of tunnels dug by the Iranians to conceal elements of their nuclear program.

Washington maintained it was a malfunction that led to the RQ-170 landing in an Iranian desert, while Tehran claimed it hacked the drone and forced it to land.

However, it is also believed that the Shahed-129 is largely based on the Israeli Hermes 450 model, rather than the American one. This means that Iranians could have also captured and reverse-engineered an Israeli drone.

## **Western components in Iranian drones**

Despite Tehran's persistent anti-West rhetoric, western components are key to the Iranian drone programme.

According to an analysis of four Iranian drones captured in Ukraine, over 70 manufacturers based in 13 different countries and territories, including the western world and Asia, produced drone components for Tehran.

Conducted by the UK-based investigative organisation Conflict Armament Research, the analysis also shows that 82 per cent of the components were manufactured in companies based in the United States.

In December last year, the Biden administration launched an expansive task force to investigate how components made in the West, including American-made microelectronics, made their way into Iranian drones.

A report by The New York Times suggests that the White House reached out to American manufacturers after photographs began to circulate of the circuit boards of downed Iranian drones in Ukraine — visibly packed with chips manufactured by the US-based firms in question.

Almost all manufacturers had the same response: the chips are unrestricted, “dual use” items and tracking or stopping their circulation is almost impossible.

Security sources abroad point out that Iran has mastered the art of operating under sanctions. For its drones and other military programmes, Iran managed to get foreign components like engines from arms brokers or through front companies that sourced the required components.

While the success of the Iranian drone programme does not come as a surprise for many in the Indian defence establishment and industry, sources say its success demands deeper introspection by New Delhi.

Explaining how Iran's focus has always centred on simple designs and simple engines, one source tells ThePrint, “India does not want to keep it simple. There is a huge disconnect between the DRDO and the end user in our country, the armed forces. The end user is not able to decide what it actually wants in a real-life scenario and the DRDO ends up promising the moon and failing to deliver.”

India's Comptroller and Auditor General (CAG) had in 2020 slammed DRDO's UAV programme for poor planning, keeping end users in dark and flouting standard operating procedures.

Pointing out that Iranian drones come equipped with baseline counter GPS jamming systems which are able to counter jamming to a certain extent, a second source says, “There are about 10 drone programmes that the Indian armed forces are inducting and none of them has a requirement to operate in a GPS-denied atmosphere.”

On why the Iranians have been able to circumvent sanctions to further their drone programme and India's efforts have fallen short, the first source says, “India is a process-driven country and not goal oriented. Iran had a goal and worked towards it. It is easier there because everything comes under the control of the Islamic Revolutionary Guard Corps”.

Sources in the defence establishment accept that much of India's focus has been on the process itself, adding that the government has been trying to make the process simpler. Building on their

argument, sources cite the IDEX programme which seeks to cut through the maze of processes and fast track development of niche technology and their easier absorption into the armed forces.

However, industry sources say the government's thrust on adding more projects to the IDEX initiative actually works against the concept.

"The idea is to focus on some core projects and ramp it up through government funding and handholding. More projects mean that the pie gets divided into smaller units. The question is whether there should be quality or numbers," says a third source in the defence establishment.

<https://theprint.in/defence/why-irans-drone-programme-is-a-triumph-harsh-sanctions-western-components-simple-designs/1326076/>

## Science & Technology News



*Tue, 24 Jan 2023*

### **Science Literature Fests Boost Scientific Temper**

Scientific temper is a buzzword in the scientific community, and policymakers often use it to highlight one of the specialties of our Constitution and nation. Even before our Constitution came into existence, we had a rich tradition of following scientific principles in our daily life; be it in our architecture, health care, agriculture and music. Of course, this knowledge is kept in the hands of a few elite sections of society.

After independence, our policymakers realised that scientific knowledge and new scientific advances from the western world should be adopted. Accordingly, they “

envisioned world-class institutions in the country and the fruits of which we are harvesting today through research and innovation. But even today, science is managed by the scientific and academic community. The science spoken by these elite communities is not digestible to the ordinary person, even though they are reaping the benefits in their daily life.

Myths and superstitions that affect human development are prevalent even in this ‘Amrit Kal’ when we are marching towards a global leader. Many educated people have an aversion to taking vaccines or believing in evolution. Only when all our citizens are scientifically literate, can our country progress in every aspect of human development. This is a challenging task in a country with diverse cultures and traditions. Many science popularisation programmes have been carried out in the country under the aegis of great institutions like Vigyan Prasar, CSIR-NIScPR (earlier CSIR-NISCAIR) and others. But still, achieving 100 per cent scientific temper seems to be a dream, the problem is that these institutions have their own limitations in reaching every nook and corner of the country.

Moreover, most of the science popularisation programmes are led by scientists who are from a science background. There are hardly any scientific institutions in the public sector where people from literature or fine arts backgrounds are recruited as scientists. This is one of the major

drawbacks of our science communication activities. We need more science communication institutions having human resources trained in science, literature and fine arts, in different regions of the country. Based on the local cultural, we need to design different science communication strategies to develop scientific temper in the society.

It is here literature comes to the rescue. Every literate person will read story books, novels, fiction and poems at some point in life, even if they don't read scientific books or journals. Literature is one area that we have missed in our science popularisation activities. Even children who are not interested in science in the classroom would like to read sci-fiction books like the Star Trek series and similar.

Many ordinary people without any scientific background, have shown interest in reading biographies of scientists like "Wings of Fire" by our former President Dr APJ Abdul Kalam. Similarly, there are many takers for the sci-fiction books written by Fred Hoyle, Gregory Benford, Carl Sagan, Isaac Asimov, Robert A Heinlein, Arthur C Clarke, Michael Crichton and others.

Even in our classroom, instead of textbooks, if science-based popular science books or literary works are included, we can generate interest in students. Studies have shown that creating connections with literary works will help engage students in science classes.

Students reported that they were immediately able to see and emotionally engage with the narrative. They might start to appreciate science for its creative potential. Students' self-assurance in science improves when they see the relevance of scientific concepts to interests they already have. It encourages kids to broaden their horizons and think beyond the box when it comes to their science coursework.

Integrating readings about accountability in science is one way to help students grasp the material. They gain self-assurance as they learn that science encompasses more than one narrow field. Students with a passion for science will find that the sessions push them to develop their critical thinking skills and open their minds to new ideas. They have also inspired many kids to pursue learning on their own time. Innovative ideas and technological advances in science and technology have been reflected by numerous well-known and representative literary works. The important interactions between science and the cultural sphere (with architecture, religion, the philosophy of the Enlightenment, or literature) throughout history demonstrate that science is a fundamental component of culture.

Jonathan Swift, in his work *Gulliver's Travels* (1726), depicts an island, Laputa, which is held up magnetically in the air, and inhabited by men who are totally dedicated to mathematics and music. Similarly, Jules Verne, in his novel *The Mysterious Island* (1874) explains the notion of man's controlling nature thanks to science and technology.

Science also influences the work of Arthur Conan Doyle. The investigation methods used by his literary creation, the detective Sherlock Holmes, are based on the positivist scientific methods taught to the author as a medical student. In recent times books by Prof. Yuval Noah Harari – *Sapiens* & *Homo Deus* -- were the best-sellers lucidly, which explain science, even though the author is not a scientist per se. He recently came out with another book *Sapiens: A Graphic History*, a radical graphical adaptation of his best-selling book *Sapiens*, targeting children and the layman.

Realising the importance of literature in science communication, the government has included 'Vigyanka' (Science literature festival) as one of the main events at the mega science event, India International Science Festival (IISF), which has been celebrated since 2015. The 'Vigyanka' event will bring scientists, literary and fine arts personnel to a common platform. The event was first conceived by Dr Nakul Parashar, Director, Vigyan Prasar, on the lines of Jaipur Lit Festival for the first time and with the help of his colleagues Kapil Tripathi and Maanbardhan Kanth launched it in IISF 2019 at Kolkata.

This initiated a new becoming in taking science communication and science education to the next level. Our science students should be taught to read novels, poems, biographies, etc., to improve their creative skills. The beauty of storytelling and poems is that even an illiterate person who listens to them will enjoy and understand scientific concepts.

In this world of trans-disciplinary learning, policymakers should open the doors of scientific institutions to people from a literature background. A good literary work, be it a novel or fiction, or poem, is a mirror of society. It can reflect problems the community faces, virtues of good values and teach people to dream higher. It can even help us document certain traditional knowledge that prevailed during the period. These values are essential for effectively bringing science to the masses. Even today, our policymakers give impetus to scientist-centric science communication. This should change to a collective teamwork of scientists, literary and fine arts persons. We must envision a nation where scientific temper is imparted to every citizen. For this, we must train our young minds, our school-going children.

We need to design materials that would digest every child, story books, comic books, novels, fiction, poems, etc, that have science components in different languages. This will make even students not interested in science learn scientific concepts indirectly. If scientists and literary figures come together, we can expedite our mission of developing scientific temper in every part of the country and make India a scientific superpower in the Amrit Kaal.

<https://www.dailypioneer.com/2023/columnists/science-literature-fests-boost-scientific-temper.html>



*Tue, 24 Jan 2023*

## **How Apple Prioritises Health with their Innovations that are 'Grounded in Science'**

Apple's advanced features and technologies are empowering researchers around the world to collect data more frequently and at a broader scale than ever before, so they can continue to move science forward.

The pandemic made everyone take their health seriously. As such, more people adopted a fitness-oriented lifestyle and made use of tech-based innovations to enhance their fitness journeys. In keeping with the same, Apple too has always prioritised health by introducing "a wide array of innovative features to help our users take care of their health every day, across fitness, heart health, mobility, sleep, menstrual health, safety and more". The multinational technology company also came up with a detailed report on how iPhone and Apple Watch have

helped many through their “actionable, science-based insights”. Talking about all this and more will be Dr Sumbul Desai, VP of Health at Apple, in a fireside chat with Dr Sangita Reddy, Joint Managing Director of Apollo Hospitals at BioAsia (Hyderabad) on Saturday, Feb 25 at 10:30am.

Apple, which recently released iOS 16 and watch OS 9, uses advanced sensor-based technology, iPhone and its flagship watch cover 17 areas of health and fitness, from heart health and sleep to mobility and women’s health. The advances in tracking, storing, analysing, and visualising health data allow patients to gain insights into their health between doctors’ visits and to be alerted when they should discuss something with their doctor. “Apple’s work to advance health is grounded in the belief that all innovation in health should be grounded in science. Today, Apple’s advanced features and technologies are empowering researchers around the world to collect data more frequently and at a broader scale than ever before, so they can continue to move science forward.

In the July 2022-report titled ‘Empowering people to live a healthier day’, Jeff Williams, Chief Operating Officer, Apple, noted that “Our vision for the future is to continue to create science-based technology that equips people with even more information and acts as an intelligent guardian for their health, so they’re no longer passengers on their own health journey. Instead, we want people to be firmly in the driver’s seat with meaningful, actionable insights.

<https://indianexpress.com/article/lifestyle/health/apple-innovation-health-fitness-case-study-report-8398955/>



*Mon, 23 Jan 2023*

## **Scientists from McGill University, Indian Institute of Science Detect Radio Signals Sent from the Galaxy**

Scientists from McGill University and the Indian Institute of Science have once again made an innovative discovery by capturing radio signals from a galaxy located almost 9 billion light-years away from the Earth, according to a report by Mcgill.ca.

This is the first time that a signal of this kind has been received from so far away.

### **How was it possible?**

Scientists were able to make this discovery by detecting the signals using a unique wavelength known as the “21-centimetre line” or the “hydrogen line,” which discharges with neutral hydrogen atoms, as per the report.

By utilizing this concept of warped space-time as a magnifying glass, the astronomers picked up the most distant signal of its kind from a remote galaxy.

With the help of this discovery, a whole new window of how the universe was formed will be opened.

This discovery of radio signals being detected from a galaxy has been published in the Monthly Notices of the Royal Astronomical Society. This research provides a fresh perspective on how a star is created in galaxies.



The main element involved in the formation of stars is atomic hydrogen, which is also the main fuel. The study mentions when hot ionized gas from the surrounding medium of a galaxy falls onto the galaxy, it cools and leads to the formation of hydrogen formation. This (hydrogen formation) then transforms into molecular hydrogen, eventually leading to the formation of stars.

This discovery has been made possible by a phenomenon known as gravitational lensing. In this, the light from the source is bent due to the presence of another massive body, such as an early-type elliptical galaxy.

This study was only possible because of the help of Arnab Chakraborty, a post-doctoral researcher at the Department of Physics and Trotter Space Institute of McGill University and Nirupam Roy, Associate Professor, at the Department of Physics, IISc. According to them, this signal was emitted from the galaxy when the universe was only 4.9 billion years old.

<https://www.financialexpress.com/lifestyle/science/scientists-from-mcgill-university-indian-institute-of-science-detect-radio-signals-sent-from-the-galaxy/2957355/>

