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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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## बिना छूए सेनेटाइजर इस्तेमाल करने वाली मशीन बनाई

अजय कुमार

देहरादून: कोरोना संक्रमण को फैलने से रोकने के लिए डीआरडीओ के वैज्ञानिक शबीर अहमद ने लॉकडाउन में दो मशीनों का निर्माण किया है। उनकी दूसरी मशीन एक मैकेनाइज्ड सेनेटाइजिंग यूनिट (एमईएसयू) है। जिसकी मदद से बिना छूए ही सेनेटाइजर का इस्तेमाल किया जा सकता है।

यह जूतों को भी सेनेटाइज करने की सुविधा भी देती है। इससे पहले शबीर मैकेनाइज्ड हैंड वॉश यूनिट तैयार कर चुके हैं। जिसे उन्होंने मुख्यमंत्री त्रिवेन्द्र सिंह रावत को भेंट किया था।

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की आईआरडीई शाखा में कार्यरत वैज्ञानिक शबीर अहमद ने बताया कि मैकेनाइज्ड सेनेटाइजिंग यूनिट को उन्होंने सात दिन में सर्वे, डिजाइन और यांत्रिक संरचनात्मक विश्लेषण करने के बाद तैयार किया।

बताया कि एमईएसयू एक प्रकार की फूट पैडल ऑपरेटेड सेनेटाइजिंग मशीन है। जो कि दो अलग तरह से काम करती है। इस मशीन के जरिये अल्कोहल बेस्ड सेनेटाइजर की बोतल को हाथ लगाए बिना ही सेनेटाइजर का इस्तेमाल कर सकते हैं।

फूट पैडल मारते ही 10 एमएल अल्कोहल बेस्ड सेनेटाइजर हाथों में आ जाता है। बताया कि जूतों के तलों को सेनेटाइज करने के लिए अलग से शू सेनेटाइजिंग स्टेशन है।

जिसमें एक नॉन रिएक्टिव स्पॉन्ज मटेरियल लगा है। जो कि सेनेटाइजिंग कैमिकल में भिगोया हुआ रहता है। जिससे जूतों को भी सेनेटाइज किया जा सकता है। वैज्ञानिक अहमद ने अपनी इस मशीन को समाजिक सुरक्षा के लिए समर्पित करते हुए मशीन को पुलिस, प्रशासन व स्वास्थ्य विभाग को सौंपने की बात कही।

### दोनों मशीनों पर चौदह हजार खर्च

वैज्ञानिक शबीर अहमद ने बताया कि दोनों मशीनों पर कुल चौदह हजार रुपए का खर्चा आया। यह काम उन्होंने अपने संसाधनों से किया। सीएम को भेंट में दी गई मैकेनाइज्ड हैंड वॉश यूनिट पर साढ़े नौ हजार और मैकेनाइज्ड सेनेटाइजिंग यूनिट बनाने पर साढ़े चार हजार रुपए का खर्चा आया।



## जूतों से भी कोरोना संक्रमण का खतरा

चीन के वुहान मार्केट में एक शोध टीम ने जूतों से कोरोना वायरस संक्रमण के खतरे का पता लगाया था। वैज्ञानिक शबीर ने बताया कि वहां 50 फीसदी डॉक्टर और लोगों के जूतों में जानलेवा कोरोना वायरस मिला था। इसलिए जूतों को भी सेनेटाइज करना बेहद जरूरी है।

<https://www.livehindustan.com/uttarakhand/dehradun/story-drdo-scientist-shabir-ahmed-makes-sanitisation-machine-used-without-touching-during-corona-virus-pandemic-in-uttarakhand-3218713.html>



Sun, 17 May 2020

## Walk-In sample collection kiosk becomes part of Navy's Sanjivani hospital

*The kiosks were handed over to Surgeon Commodore Arti Sarin, Command Medical Officer (CMO), Southern Naval Command by Sameer Abdul Azeez and his team from NPOL on Friday*

Kochi: An indigenously built COVID WISK (Walk-in Swab Collection Kiosk) for safe collection of sample of symptomatic people has become part of the Indian Navy's Sanjivani Hospital.

The kiosk provides physical and psychological support for the health staff during swab collection and more importantly saves PPE consumption.

Inspired by South Korea's innovative way of testing for COVID-19 symptoms, a Government Medical College Hospital here had last month set up low cost kiosks at its premises for safe collection of samples of symptomatic people.

The Naval Physical & Oceanographic Laboratory (NPOL), here reshaped it in line with Navy's suggestion to make them portable for compatibility in ambulance and helicopters.

"The cost-effective design, using low cost materials, configures the product as "knock-down kits", which are easy to transport as multiple units, requiring lower transit space envelopes," a Defence spokesman said here on Saturday.

The product is easy to assemble at site, has better internal air circulation and can be installed outdoors also. It is also designed keeping Indian anthropometric parameters in mind, thereby enhancing the ergonomics, he said.

The kiosks were handed over to Surgeon Commodore Arti Sarin, Command Medical Officer (CMO), Southern Naval Command by Sameer Abdul Azeez and his team from NPOL on Friday, the Defence spokesman said.

A demonstration of the WISK was conducted at INS Garuda airfield by dismantling and loading of WISK in a helicopter. (With PTI inputs)

<https://english.manoramaonline.com/districts/ernakulam/2020/05/16/walk-in-sample-collection-kiosk-becomes-part-of-indian-navy.html>



# The Department of Defense is also working on a 'whisk' model to make the covid test more effective

## കോവിഡ് പരിശോധന കൂടുതൽ ഫലപ്രദമാക്കാനുള്ള 'വിസ്കി' മാതൃക പ്രതിരോധ വകുപ്പിലും

കളമശേരി മെഡിക്കൽ കോളേജ് നിർമ്മിച്ച വിസ്കിന്റെ മാതൃക പരിഷ്കരിച്ചാണ് പുതിയ വിസ്കിന്റെ നിർമ്മാണം

പ്രകാശ് സി എൻ TV

കോവിഡ് പരിശോധന കൂടുതൽ ഫലപ്രദവും സൗകര്യപ്രദവുമാക്കാൻ കളമശേരി മെഡിക്കൽ കോളേജിലെ ഡോക്ടർമാർ വികസിപ്പിച്ച വാക് ഇൻ സിമ്പിൾ കിയോസ്ക് എന്ന 'വിസ്കി' പ്രതിരോധ വകുപ്പിലേക്കും. വിസ്കിന്റെ നവീകരിച്ച മാതൃകയാണ് ഡിഫെൻസ് റിസർച്ച് ആൻഡ് ഡെവലപ്മെന്റ് ഓർഗനൈസേഷൻ തയ്യാറാക്കിയിട്ടുള്ളത്. കളമശേരി മെഡിക്കൽ കോളേജ് നിർമ്മിച്ച വിസ്കിന്റെ മാതൃക പരിഷ്കരിച്ചാണ് പുതിയ വിസ്കിന്റെ നിർമ്മാണം.

നേവൽ ഫിസിക്കൽ ആൻഡ് ഓഷ്യനോഗ്രഫിക് ലബോറട്ടറിയിൽ പുതിയ വിസ്കിലെ മർദ്ദക്രമീകരണങ്ങളും

വായുസഞ്ചാരവും ഉൾപ്പടെ പരിശോധിച്ച ശേഷമാണ് അനുമതി നൽകിയിട്ടുള്ളത്. നാവിക സേനയിൽ



പ്രതിരോധം ഉറപ്പാക്കലാണ് പുതിയ വിസ്കിന്റെ ആദ്യ ദൗത്യം.

കളമശേരി മെഡിക്കൽ കോളേജിലെ ആർ.എം.ഒ. ഡോ: ഗണേഷ് മോഹൻ, അഡിഷണൽ ജില്ല മെഡിക്കൽ ഓഫീസർ ഡോ: വിവേക് കുമാർ, ആർദ്രം ജില്ല അസിസ്റ്റന്റ് നോഡൽ ഓഫീസർ ഡോ: നിഖിലേഷ് മേനോൻ, എ.ആർ.എം.ഒ. ഡോ: മനോജ് എന്നിവരുടെ മേൽനോട്ടത്തിലാണ് പുതിയ വിസ്കും നിർമ്മിച്ചിട്ടുള്ളത്.

ഹെലികോപ്റ്ററുകളിൽ ഘടിപ്പിക്കാവുന്ന വിസ്കി 2.0 സായുധ സേനയുടെ കോവിഡ് പ്രതിരോധ പ്രവർത്തനങ്ങൾക്ക് മുതൽക്കൂട്ടാവുമെന്നാണ് പ്രതീക്ഷിക്കുന്നത്. പരിശോധന സൗകര്യങ്ങൾ വളരെ പരിമിതമായ സ്ഥലങ്ങളിലും വിസ്കിന്റെ പുതിയ മാതൃക ഉപയോഗിക്കാൻ സാധിക്കും.

അഴിച്ച്കൊടുക്കാനും മടക്കാവുന്നതുമായ പുതിയ വിസ്കിനെ ഹെലികോപ്റ്റർ വഴി ഐ.എൻ.എസ്. സഞ്ജീവനിയിൽ എത്തിച്ച് ആദ്യ പരീക്ഷണം നടത്തി. കളമശ്ശേരി മെഡിക്കൽ കോളേജിൽ തദ്ദേശീയമായി വികസിപ്പിച്ച വിസ്ക് വിവിധ സംസ്ഥാനങ്ങളിൽ നിലവിൽ ഉപയോഗിക്കുന്നുണ്ട്. രണ്ട് മിനിറ്റിൽ താഴെ സമയം കൊണ്ട് സാമ്പിൾ ശേഖരണം സുരക്ഷിതമായി പൂർത്തിയാക്കാം എന്നതാണ് വിസ്കിന്റെ പ്രധാന സവിശേഷത.

<https://malayalam.news18.com/news/coronavirus-latest-news/wisk-technology-makes-way-to-the-defence-wing-tv-cnp-mm-237525.html>



Sun, 17 May 2020

## Kovid Resistance: To the Department of Wisk Defense; DRDO will build the revamped model

# കൊവിഡ് പ്രതിരോധം: വിസ്ക് പ്രതിരോധ വകുപ്പിലേക്കും; നവീകരിച്ച മാതൃക ഡിആർഡിഒ നിർമ്മിക്കും

കൊച്ചി : കൊവിഡ് പരിശോധന കൂടുതൽ ഫലപ്രദവും സൗകര്യ പ്രദവുമാക്കാൻ കളമശ്ശേരി മെഡിക്കൽ കോളേജിലെ ഡോക്ടർമാർ വികസിപ്പിച്ച വാക് ഇൻ സിമ്പിൾ കിയോസ്ക് എന്ന വിസ്ക് പ്രതിരോധ വകുപ്പിലേക്കും. വിസ്കിന്റെ നവീകരിച്ച മാതൃകയാണ് ഡിഫെൻസ് റിസർച്ച് ആൻഡ് ഡെവലപ്പ്മെന്റ് ഓർഗനൈസേഷൻ തയ്യാറാക്കിയിട്ടുള്ളത്. കളമശ്ശേരി മെഡിക്കൽ കോളേജ് നിർമ്മിച്ച വിസ്കിന്റെ മാതൃക പരിഷ്കരിച്ചാണ് പുതിയ വിസ്കിന്റെ നിർമ്മാണം. നേവൽ ഫിസിക്കൽ ആൻഡ് ഓഷ്യനോഗ്രഫിക് ലബോറട്ടറിയിൽ പുതിയ വിസ്കിലെ മർദ്ദ ക്രമീകരണങ്ങളും വായു സഞ്ചാരവും ഉൾപ്പെടെ പരിശോധിച്ച ശേഷമാണ് അനുമതി നൽകിയിട്ടുള്ളത്.

നാവിക സേനയിൽ പ്രതിരോധം ഉറപ്പാക്കലാണ് പുതിയ വിസ്കിന്റെ ആദ്യ ദൗത്യം. കളമശ്ശേരി മെഡിക്കൽ കോളേജിലെ ആർ എം ഒ ഡോ. ഗണേഷ് മോഹൻ, അഡിഷണൽ ജില്ലാ മെഡിക്കൽ ഓഫീസർ ഡോ. വിവേക് കുമാർ, ആർദ്രം ജില്ലാ അസിസ്റ്റന്റ് നോഡൽ ഓഫീസർ ഡോ. നിഖിലേഷ് മേനോൻ, എ ആർ എം ഒ ഡോ. മനോജ് എന്നിവരുടെ മേൽനോട്ടത്തിലാണ് പുതിയ വിസ്കും നിർമ്മിച്ചിട്ടുള്ളത്. ഹെലികോപ്റ്ററുകളിൽ ഘടിപ്പിക്കാവുന്ന വിസ്ക് 2.0



സായുധ സേനയുടെ കൊവിഡ് പ്രതിരോധ പ്രവർത്തനങ്ങൾക്ക് മുതൽക്കൂട്ട് ആവുമെന്നാണ് പ്രതീക്ഷിക്കുന്നതെന്ന് അധികൃതർ വ്യക്തമാക്കി.

പരിശോധന സൗകര്യങ്ങളുടേ വളരെ പരിമിതമായ സ്ഥലങ്ങളിലും വിസ്കിന്റെ പുതിയ മാതൃക ഉപയോഗിക്കാൻ സാധിക്കും. അഴിച്ച്കൊടുക്കാനും മടക്കാവുന്നതുമായ പുതിയ വിസ്കിനെ ഹെലികോപ്റ്റർ വഴി ഐ എൻ എസ് സഞ്ജീവനിയിൽ എത്തിച്ചു ആദ്യ പരീക്ഷണം നടത്തി. കളമശ്ശേരി മെഡിക്കൽ കോളജിൽ തദ്ദേശീയമായി വികസിപ്പിച്ച വിസ്കി വിവിധ സംസ്ഥാനങ്ങളിൽ നിലവിൽ ഉപയോഗിക്കുന്നുണ്ട്. രണ്ട് മിനിറ്റിൽ താഴെ സമയം കൊണ്ട് സാമ്പിളി ശേഖരണം സുരക്ഷിതമായി പൂർത്തിയാക്കാം എന്നതാണ് വിസ്കിന്റെ പ്രധാന സവിശേഷത.

<https://www.thejasnews.com/news/kerala/covid-resistance-wisk-use-defence-department-134180>

## दैनिक जागरण

Sun, 17 May 2020

### केरल: कोरोना संक्रमितों के सैंपल इकट्ठा करने के लिए DRDO ने बनाए WISK

इससे उन लोगों के सैंपल इकट्ठा करेंगे जो कोरोना संक्रमण की चपेट में हैं।  
कियोस्क के जरिए पीसीआर टेस्ट और रैपिड टेस्ट किया जा सकता है।

कोच्चि: कोरोना संक्रमण को रोकने के लिए केरल में विस्क यानि वॉक-इन सैंपल कलेक्शन कियोस्क तैयार किए गए हैं। इसका निर्माण संयुक्त रूप से डीआरडओ के नेवल फिजीकल, समुद्र विज्ञान प्रयोगशाला (oceanographic laboratory- NPOL) और एर्नाकुलम सरकारी मेडिकल कॉलेज द्वारा की गई है। शनिवार को यह विस्क आइएनएचएस संजीवनी अस्पताल को सौंप दिया गया है।



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<https://www.jagran.com/news/national-drdo-developed-wisk-for-to-collect-samples-of-covid-19-infected-patients-in-kerala-20278596.html>



Sun, 17 May 2020

### Walk-In Sample Collection kiosk becomes part of Indian Navy

Kochi: An indigenously built COVID WISK (Walk-in Swab Collection Kiosk) for safe collection of samples of symptomatic people has become part of the Indian Navy.

The kiosk provides physical and psychological support for the health staff during swab collection and more importantly saves PPE consumption.

Inspired by South Korea's innovative way of testing for COVID-19 symptoms, a Government Medical College Hospital here had last month set up low cost kiosks at its premises for safe collection of samples of symptomatic people.

The Naval Physical & Oceanographic Laboratory (NPOL), here reshaped it in line with Navy's suggestion to make them portable for compatibility in ambulance and helicopters.

"The cost-effective design, using low cost materials, configures the product as "knock-down kits", which are easy to transport as multiple units, requiring lower transit space envelopes," a Defence spokesman said here on Saturday.

The product is easy to assemble at site, has better internal air circulation and can be installed outdoors also. It is also designed keeping Indian anthropometric parameters in mind, thereby enhancing the ergonomics, he said.

The kiosks were handed over to Surgeon Commodore Arti Sarin, Command Medical Officer (CMO), Southern Naval Command by Sameer Abdul Azeez and his team from NPOL on Friday, the Defence spokesman said.

A demonstration of the WISK was conducted at INS Garuda airfield by dismantling and loading of WISK in a helicopter.

*(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: PTI)*

<https://www.outlookindia.com/newscroll/25-migrant-workers-killed-40-injured-in-trailertruck-collision-in-ups-auraiya/1836598?scroll>

**THE TIMES OF INDIA**

*Sun, 17 May 2020*

## **Hyderabad RCI scientists come to the rescue of elderly**

*By Sunil Mungara*

Hyderabad: Scientists at Hyderabad Research Centre Imarat (RCI), a Defence Research and Development Organisation lab, have stepped forward to donate groceries to senior citizens residing in five old age homes during the lockdown. Dry goods, including rice, atta, red gram, green gram, black gram and edible oil, are being supplied. "It has become very difficult for old age homes to procure groceries during the lockdown. We collect goods from donors and deliver them to these homes in Bandlaguda, Karmanghat, Badangpet and adjoining areas of RCI, through our 'Defence Security Corps' (DSC) of the RCI-DRDO for the past few weeks. Few scientists also donated cash to purchase the material," defence sources in DSC told TOI.

The material was procured after collating the data of number of people residing in these homes. The scientists found that around 60 to 90 senior citizens are staying in each old age home. QRT trucks were then used to transport goods to the doorsteps of these old age homes.

"We thank the RCI scientists for their goodwill as it had become really difficult for us in these situations to continue providing food to the elderly for breakfast, lunch and dinner," said Srinivas Rao, an organiser at the Arshita Old Age home in Badangpet.

G Giri, who runs the Mathru Devobhava Ashramam said, "I thanks the blessings that have come out way. The scientists and their families came to our rescue when we least expected it."

The prolonged lockdown and strict movement restriction had led to a shortage of various essentials for these homes. People had also been struggling to get vital medicines. Certain good samaritans from the city had come forward in situations like these to help the elderly in need.

<https://timesofindia.indiatimes.com/city/hyderabad/rci-scientists-come-to-the-rescue-of-elderly/articleshow/75782437.cms>



## New defence reforms major steps towards self-reliance, will boost production and research: DRDO Chief

*Reforms in the defence sector will help boost the defence production and research in the military sector within the country said DRDO Chairman Dr G Satheesh Reddy*

### Key Highlights

- *India announced the increase in FDI limit on defence from existing 49 per cent to 74 per cent*
- *'These decisions will encourage both private and public sector industry to increase indigenous content in the inventory'*
- *India is an important market for the global defence industry*

New Delhi: Reform measures in defence sector announced by Finance Minister Nirmala Sitharaman to promote the domestic defence industry will help boost production and research in the military sector, said DRDO Chairman Dr G Satheesh Reddy.

Calling it a major step towards self-reliance, the DRDO Chief hailed the decision to ban imports of certain weapons and platforms, indigenisation of imported spares and budget allocation for indigenous capital procurement.

Sitharman, who held the defence portfolio in the first Narendra Modi-led government, announced the increase in Foreign Direct Investment (FDI) limit on defence from existing 49 per cent to 74 per cent.

**'These decisions will encourage both private and public sector'**

Apart from the creation of a negative import list, Sitharaman also made a separate budget allocation for acquiring indigenous capital goods.

With these decisions, big importance will be given by the private and public sector industry to do research and development in the field of advanced systems, said Reddy.

The DRDO Chairman believes that these sweeping reforms will not only encourage both private and public sector industry to increase indigenous content in the inventory of armed forces but will also help India become self-reliant in the sector.

### India top three importers of military hardware

One of the top three importers of military hardware, India remains an important market for the global defence industry.

From the acquisition of Rafale fighter jets from France, Apache AH-64 E and the Chinook CH-47F (I) from the US to the S-400 Triumf advanced surface-to-air missile system from Russia, many more major deals are currently in the pipeline.

As per the Union Budget for the financial year 2020-21, Rs 4,71,378 crore was allocated for Defense with a lion's share given to the Army, the Navy and the Indian Air Force.



Union Finance Minister Nirmala Sitharaman | Photo Credit: IANS Union Finance Minister Nirmala Sitharaman | Photo Credit: IANS

According to a report by Stockholm International Peace Research Institute (SIPRI), India's defence spending stood at USD 71.1 billion in 2019, a third highest after the United States and China.

<https://www.timesnownews.com/india/article/new-defence-reforms-major-steps-towards-self-reliance-will-boost-production-and-research-drdo-chief/592985>



Sun, 17 May 2020

## New defence reforms to boost both production, research in military sector: DRDO Chief

*Reacting positively to the reforms announced in the defence sector, DRDO Chairman Dr G Satheesh Reddy on Saturday said that the measures will help boost the defence production and research in the sector within the country*

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"The decision to ban imports of certain weapons and platforms, indigenisation of imported spares, budget allocation for indigenous capital procurement are major steps towards self-reliance and will boost defence industry in the country," the DRDO Chief said.

He was asked to comment on the defence reforms announced by Finance Minister Nirmala Sitharaman.

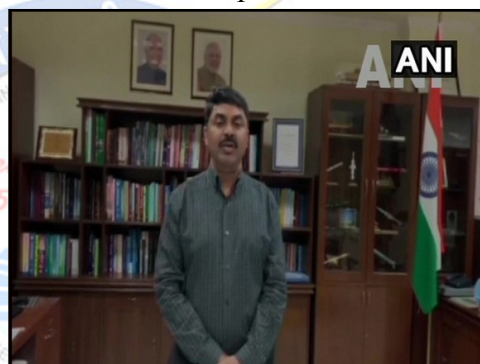
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She also announced the creation of a negative import list as well as the creation of separate budget allocation for acquiring indigenous capital goods.

Reddy said that with these decisions, big importance will be given by the private and public sector industry to do research and development in the field of advanced systems.

The DRDO chairman said the decisions will encourage both private and public sector industry to increase indigenous content in the inventory of armed forces and will help the country become self-reliant in the sector. (ANI)

<https://www.devdiscourse.com/article/headlines/1054110-new-defence-reforms-to-boost-both-production-research-in-military-sector-drdo-chief>



DRDO Chairman Dr G Satheesh Reddy.  
Image Credit: ANI

Sun, 17 May 2020

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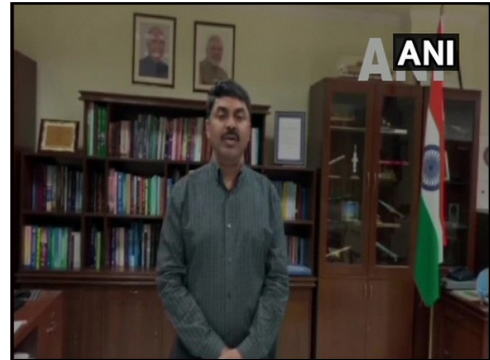
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<https://www.aninews.in/news/national/general-news/new-defence-reforms-to-boost-both-production-research-in-military-sector-drdo-chief20200516233438/>



New defence reforms to boost both production, research in military sector: DRDO Chief



Sun, 17 May 2020

## **Will rather prefer MWF-Mk2 then additional Tejas Mk1A: Sources**

Statement made by Chief of Defence Staff Bipin Rawat that IAF is ready to accept additional Tejas over MMRCA 2 Tender for 114 units of fighter jets of foreign make has gone without any clarification coming out of Indian Air Force (IAF) on this regard but a senior ranking serving officer speaking to idrw.org has said that present virus and economic situation makes it difficult to push for procurement of foreign fighter jet but it is still hopeful that they will be allowed since the original plan of things already had "Make in India" factored in and these jets were supposed to be made in India.

While IAF's Top Brass is tight lipped about it, idrw.org was informed that deal for 83 Tejas Mk1A is just a formality now and can happen in coming weeks but IAF has no plans to order more

of the upgraded Tejas MK1A as a supplement to the MMRCA jets since both were planned with different roles in the air force and are from different weight category as MMRCA 2 tender was not about Mig-21 replacement it was always about strengthening the mid-tier category of fighter jet fleet in the Air force.

MWF-Mk2 which is the further development of the baseline LCA-Tejas and under development might become IAF's first choice if the MMRCA 2 is canceled hinted officer to the idrw.org. MWF-Mk2 which is bigger and better and modeled to be technically superior to the Mirage-2000-5 upgraded jets in the fleet can fill in the shoe but it will not be as advanced as the 36 Dassault Rafale which IAF had ordered as interim purchase and was looking forward to procuring 114 units more under Make in India, MMRCA Tender.

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<https://idrw.org/will-rather-prefer-mwf-mk2-then-additional-tejas-mk1a-sources/#more-227518>



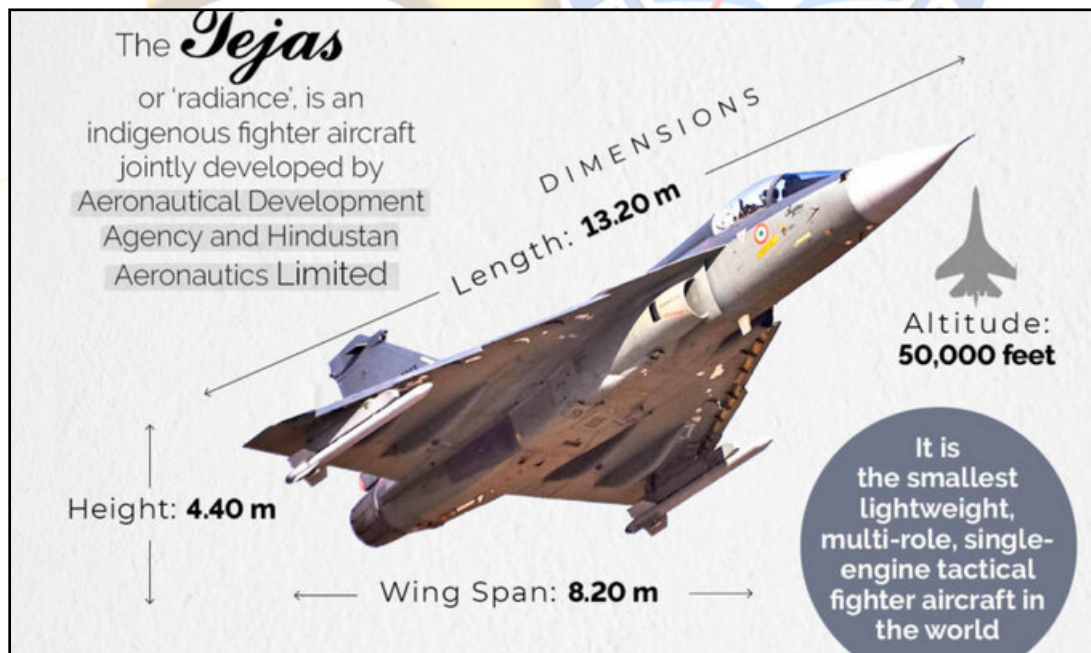
**DEFENCE AVIATION POST**

Your Connect To The World Of Defence And Aviation

Sun, 17 May 2020

## Tejas LCA: Why the Indigenous fighter jet makes a perfect case for PM Modi's vocal for local call

In his recent speech while addressing the country hard-struck by the Covid-19 pandemic, Prime Minister Narendra Modi made it clear that India need to reduce its dependence on goods imported from abroad to boost the economy hit by the pandemic. Before this speech, PM Modi has said it many times to reduce dependency on foreign weapons and make indigenous weapons in India.



While IAF earlier floated tender from international producers two years ago for 114 aircraft, Indian Air Force now plans to replace its ageing soviet-sourced fighter jets with the locally-manufactured Tejas LCA (Light Combat Aircraft) developed and manufactured by Hindustan Aeronautics Limited.

<https://www.defenceaviationpost.com/2020/05/tejas-lca-why-the-indigenous-fighter-jet-makes-a-perfect-case-for-pm-modis-vocal-for-local-call/>

## Say goodbye to India's Super F-16

By David Axe

Our chances of getting a new kind of F-16 just dramatically shrank. The Indian air force recently signaled it would cancel a tender for foreign-made warplanes.

It was that contest that motivated American plane-maker Lockheed Martin LMT to develop a unique, highly-advanced F-16 variant the company called the "F-21."

The Indian air force in 2019 announced it would spend up to \$15 billion buying 114 fighters. The plan was for the new planes to replace old MiG-21s and fly alongside



European-designed Jaguars, French Mirage 2000s and Rafales, Russian MiG-29s and Su-30s and India's own indigenous Tejas Light Combat Aircraft in what Lockheed described as "the world's largest fighter aircraft ecosystem."

The F-21, Boeing BA 's F/A-18E/F, the Rafale, the European Typhoon, the Swedish Gripen E and the Russian MiG-35 and Su-35 all were contenders. Indian companies would have assembled the new jets on license.

No longer. "The Indian Air Force is switching that to the LCA," Chief of the Defense Staff Bipin Rawat said in an interview. The air force would order 83 additional Tejas on top of the 40 LCAs the service already has paid for.

Those 83 LCAs would cost \$6 billion. That's less than half what New Delhi planned to spend under the previous tender, implying that cost motivated the decision.

"The IAF is saying, I would rather take the indigenous fighter, it is good," Rawat said.

The Indian air force in 2020 maintains just 28 fighter squadrons against a requirement for 42 squadrons. The service hopes to stand up three new units in 2020 as additional Rafales, Su-30s and LCAs arrive.

Hindustan Aeronautics' Tejas, which first flew in 2001, is far less sophisticated than the F-21 would have been. The delta-wing, lightweight LCA can carry around 8,000 pounds of ordnance—half what an Indian Su-30MKI can haul. The Tejas also is slower and less maneuverable than India's other foreign-made fighters are.

The F-21, by contrast, would have included technology from the company's F-22 and F-35 stealth fighters. "The F-21 has common components and learning from Lockheed Martin's fifth-generation F-22 and F-35 and will share a common supply chain on a variety of components," Lockheed stated on its website on the morning of Feb. 20, 2019.

A few hours later, that claim disappeared from the site. In any event, the F-21 would have been the most advanced version yet of the single-engine F-16, which flew for the first time in 1974.

The F-21 design boasted new cockpit displays, conformal fuel tanks, a large airframe spine that could accommodate communication systems or radar-jammers, fittings for towed radar decoys, a new infrared sensor and a refueling probe for use with India's Russian-made aerial tankers.

Production of the F-21 would have extended one of the world's most successful fighter programs.

Around 2,300 of F-16s fly for more than 30 air arms, accounting for no less than four percent of all the world's military aircraft. But even without an Indian order, Lockheed anticipates it could continue building new F-16s through 2030.

<https://www.forbes.com/sites/davidaxe/2020/05/16/say-goodbye-to-indias-super-f-16/#7336c5c23ca6>

Sun, 17 May 2020

## Flexible procurement rules, hand-holding defence PSUs: CDS' plan for domestic manufacturing

*General Bipin Rawat's plans to boost defence manufacturing comes just before Finance Minister Nirmala Sitharaman's 'structural reforms' announcement*

*By Amrita Nayak Dutta*

New Delhi: The General Staff Qualitative Requirements (GSQRs) will need to be made flexible to boost domestic defence manufacturing, Chief of Defence Staff (CDS) General Bipin Rawat said Thursday, ahead of Finance Minister Nirmala Sitharaman's announcement of a slew of "structural reforms" in the sector.

An initial step for capital procurement, the GSQRs broadly detail the reasons behind the need of an equipment, and its physical, qualitative specifications and maintenance requirements.

In an interaction with a limited group of journalists, the CDS said the military usually scouted for weapons and equipment in countries like the US and Russia as India doesn't have an indigenous industry in defence manufacturing and often framed their requirements based on the quality of their equipment and weapons.



File image of CDS General Bipin Rawat | Photo: Suraj Singh Bisht | ThePrint

"You have to see what is your threat and what kind of a weapon you should need... The US has advanced technologies. They have been working on development of weapons from World War II. That's when the US defence industry took off," he said.

"So, when you came out with the GSQRs for your weapon systems, you started formulating them based on those (the US) systems," he said.

When the Indian domestic industry was asked to develop the system based on those equipment, they ran into trouble, he said. "DRDO, Ordnance factories, did not have that kind of technology to start manufacturing that quality of weapons or ammunition. So what we are suggesting is, please look at what your industry can deliver... Your industry can deliver that, but it may take some time."

His comments came two days ahead of Saturday's announcement by FM Sitharaman. Among other measures to boost the 'Make in India' programme, the FM raised the foreign direct investment limit in defence manufacturing to 74 per cent from the current 49 per cent.

### **On rules for procurement**

Speaking about GSQRs, General Bipin Rawat said the question is if they can be lowered in terms of performance, but not quality.

“For example, if there is a missile available with the Americans which can fire from an aircraft at a range of 7 km, can you accept a missile that fires from a range of 5 km?” he said.

Rawat said this is particularly important because if domestic manufacturers are not able to meet the given high GSQRs, then the specifications can't be changed later according to current rules.

This leaves the forces with limited choices to procure their equipment, and also delays the procurement process. So the acceptable and desirable ranges should be listed in the GSQRs when they are framed, said the CDS.

Rawat added that manufacturers should also be given a “plus-minus-leeway” on their products. Otherwise, a good product can be lost if there is too much rigidity in the requirements.

“If you want your industry to flourish you cannot expect them to make what Western nations and Russia are producing, who have developed technology for over a period of time by developing the defence industry. You did not develop the defence industry,” he said.

On the accountability of defence public sector undertakings and Ordnance Factory Boards (OFBs), Rawat said that while they need to be made accountable, the forces should also handhold them.

There should be some military induction into OFBs and they should be handheld and told where the issues are, said the CDS.

On Saturday, FM Nirmala Sitharaman also announced the government move to corporatise the OFBs.

### **On priorities during Covid-19**

In the wake of budget capping due to the economic impact of Covid-19, General Bipin Rawat said a priority list is being worked out in consultation with the Service chiefs.

“Every arm and Service is being looked at differently. For the IAF, the aircraft, radars and missile systems are the priority. For the Navy, there are some ships under construction which are on priority. The Indian Aircraft Carrier 2, supposed to roll out by the end of this year, is also a priority,” he said. “But the higher priority is the ammunition.”

The CDS said all deals which have been signed are going through as scheduled.

“Only the cost negotiation committees have been delayed,” he said, adding that the supply orders too are delayed on account of that. “However, 2-3 months is a very short time in a procurement process. If Covid-19 carries on till throughout the year, then the effect can be assessed,” he said.

<https://theprint.in/defence/flexible-procurement-rules-hand-holding-defence-psus-cds-plan-for-domestic-manufacturing/423315/>

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**THE TIMES OF INDIA**

*Sun, 17 May 2020*

## **In major defence reforms, govt pushes for desi arms**

*By Rajat Pandit*

New Delhi: The armed forces will now have to willy-nilly shed their penchant for exorbitant foreign weapon systems and platforms, unless they can be made in India through joint ventures with global armament and aviation majors.

This was the unequivocal message in the announcement of some long-pending defence reforms by the government on Saturday, which ranged from banning the import of certain weapons through a progressively-expanding negative list to significantly hiking the FDI limit to 74% from the existing 49% in the defence production sector through the automatic clearance route.

# INDIGENOUS WEAPONS OVER EXORBITANT FOREIGN ONES

**Negative list:** Imports of certain weapons/platforms to be banned. List will be expanded every year as domestic production capacity increases

**Capital Budget:** Separate budget to procure indigenous weapon & platforms

**FDI Limit:** Will be increased from 49% to 74% under automatic route, with security clearances

**Ordnance Factory Board:** Will be corporatised to improve functioning of 41 ordnance factories

TOI, MAY 10, 2020

## Forces must shun imports, go for 'Make In India', says Rawat

'Should Not Misrepresent Requirements'



Should it be affected, we need to be realistic, start adjusting and focus on what is our operational priority and what we should focus on. We should focus on what is our operational priority and what we should focus on. We should focus on what is our operational priority and what we should focus on.

General Rawat said that the defence forces must shun imports and go for 'Make In India'. He said that the defence forces must shun imports and go for 'Make In India'. He said that the defence forces must shun imports and go for 'Make In India'.

**Maintenance & Spares:** Indigenisation of expensive imported spares

**Procurement Process:** Time-bound, with faster decisions through a project management unit, realistic framing of technical parameters & overhauling trial procedures

Several global arms majors have for long been demanding the hike in the FDI limit on the ground that they need “more management control” of the JVs to step up investments and provide top-notch military technologies to India.

India has attracted a paltry Rs 1,834 crore as FDI in the defence and aerospace sectors since 2014. In the same timeframe, the country has inked over 120 “capital procurement” contracts roughly worth around Rs 2 lakh crore with foreign armament companies.

India, with an annual defence budget of about \$70 billion, is behind only the US (\$732 billion) and China (\$261 billion) in terms of military expenditure around the globe. It is also the second-largest buyer of foreign weaponry after Saudi Arabia in the world, accounting for 9.2% of the total global arms imports during 2015-2019.

This will no longer do, declared finance minister Nirmala Sitharaman on Saturday, though some cutting-edge weapons will continue to be imported. India will stop importing arms that can be made indigenously to reduce the “huge defence import bill”, with a thrust also on domestically manufacturing even the expensive spares of the imported weapons. A separate capital budget, in turn, will also be created to buy indigenously-produced weapons, she said.

"We will notify a list of weapons and platforms for ban on their imports and fix deadlines to do it," she said. The negative list, to be prepared in coordination with the newly-created department of military affairs led by chief of defence staff General Bipin Rawat, will be expanded every year as domestic production capacities grow. Among the first lot of weapon systems to be included in this list are likely be artillery guns and some types of helicopters, said sources.



A clear indication of these big-bang reforms, with the renewed thrust on “Make in India”, had come in the exclusive interview of Gen Rawat published in the May 10 edition of TOI.

The 15-lakh strong Indian armed forces, which do not have an “expeditionary” role, have to get rid of their overwhelming dependence on foreign arms and refrain from framing “unrealistic” technical parameters or GSQRs (general staff qualitative requirements) for weapon systems that DRDO-domestic industry cannot deliver in specified timeframes, Gen Rawat had told TOI.

Sitharaman, on her part, said there would be a time-bound defence procurement process, with “faster decision-making” through the setting of a “project management unit” to support contract management, “realistic” framing of GSQRs and overhauling of the cumbersome trial and testing procedures. Unrealistic GSQRs often result in a lengthy search for weapons and lead to single-vendor situations that are against the rules, she said.

The 41 factories under the Ordnance Factory Board (OFB), which with an annual turnover of around Rs 19,000 crore is the main source of supply of arms and ammunition for the Army, will also be “corporatized” to improve its “autonomy, accountability and efficiency”, she said, stressing that it did not mean “privatization” in any way.

The Army had last year sounded the alarm over the unacceptably high number of accidents and casualties taking place in the field due to the poor and defective quality of ammunition being supplied for tanks, artillery, air defence and other guns by the OFB, as was then reported by TOI.

The long-pending draft note for the Cabinet Committee on Security on corporatization of the OFB says it would help increase the state-owned entity’s turnover to Rs 30,000 crore by 2024-25, enhance its exports to 25% of the turnover, and increase self-reliance in technology from the existing 20% to 75% by 2028-29.

<https://timesofindia.indiatimes.com/india/in-major-defence-reforms-govt-pushes-for-desi-arms/articleshow/75780298.cms>

**The Statesman**

Sun, 17 May 2020

## Military experts welcome reform measures in defence sector

***Sitharaman announced a series of initiatives to promote indigenous defence production which included making separate budgetary outlay to procure Indian-made military hardware***

New Delhi: Military experts on Saturday welcomed the reform measures rolled out by Finance Minister Nirmala Sitharaman to promote the domestic defence industry, saying their proper implementation will help India significantly cut its ballooning import bill on weapons and military platforms.

At a press conference, Sitharaman announced a series of initiatives to promote indigenous defence production which included making separate budgetary outlay to procure Indian-made military hardware, increasing FDI limit from 49 per cent to 74 per cent under the automatic route and generating a year-wise negative list of weapons whose import won’t be allowed.

Experts said increasing the existing Foreign Direct Investment (FDI) cap to 74 per cent will encourage global players like Lockheed Martin, Boeing, Airbus and Dassault Aviation to set up manufacturing hubs in India and bring niche technology without hesitation as the firms will have majority stakes in their Indian subsidiaries.



Indian Air Force, Indian Army, Indian Navy, and CDS insignia is located at National War Memorial which is located in New Delhi, India. (Photo: iStock)

India is one of the most lucrative markets for global defence giants as it figured among top three importers of military hardware in the world for the last eight years. According to estimates, the Indian armed forces are projected to spend around USD 130 billion in capital procurement in the next five years.

“Nobody is going to give us critical technology unless we provide them facilities to produce for the global market,” former Army Chief Gen (ret'd) N C Vij told PTI while welcoming the government’s reform initiatives in the defence sector.

He said India must aim to become self-reliant in defence manufacturing as it would be difficult for the country to keep allocating scarce resources to import expensive weapons and platforms to confront complex security challenges along the northern and western borders.

“The kind of money we require to beat the security challenges is so much. We cannot afford to make that kind of an allocation year-after-year. There is a need for us to be self-reliant in defence production, particularly when our economy was hit hard following the COVID-19,” he said.

Lt Gen (ret'd) Subrata Saha, former Deputy Chief of Army Staff, identified the proposed ban on imports of certain weapons and platforms as the most significant announcement by Sitharaman.

“In the process, the government is giving fixed timelines for indigenous production of specific weapons and platforms. It will make sure that there is accountability,” he said.

Former Chief of Air Staff Air Chief Marshal (ret'd) Fali Major praised the government’s announcement on corporatisation of the Ordnance Factory Board, the nearly 200-year-old organisation that operates 41 ammunition production facilities across the country.

“I welcome the reform initiatives. Raising of the FDI limit will give major impetus to defence production in India,” he said.

Lt Gen Saha also lauded the announcement by Sitharaman, a former defence minister, that separate allocation in the budget will be made to procure India-made military hardware besides the proposed setting up of project management teams to oversee implementation of specific programmes.

Another defence expert, Lt Gen S L Narasimhan said the reform measures were in the offing for quite sometime and that they will give a major push to the Make in India initiative in the defence sector.

Gen Vij felt the finance minister’s announcement would help India realise its goal of achieving defence exports worth USD 5 in next five years.

“The reform measures are very timely and they will significantly boost our defence industry,” the former Army Chief said.

In February, Prime Minister Modi set a target of USD 5 billion worth of military exports in the next five years and invited global defence majors to set up manufacturing hubs in the country.

In her announcement, Sitharaman also said the process for General Staff Qualitative Requirements (GSQRs) will be made realistic. In GSQRs, the armed forces define criteria to procure platforms and hardware.

India was among the world’s three top importers of military hardware.

According to a latest report by Stockholm International Peace Research Institute (SIPRI), a leading think-tank on military spending, India’s defence expenditure stood at USD 71.1 billion in 2019, which is the third highest after the US and China.

In 2017, the government came up with an ambitious policy under which select private firms were to be roped in to build key military platforms like submarines and fighter jets in India in partnership with global defence majors.

<https://www.thestatesman.com/india/military-experts-welcome-reform-measures-defence-sector-1502889557.html>

## Navy will provide crucial intelligence to northern, western border theatre commands: Rawat

*Speaking about integration plans of the Services, CDS General Bipin Rawat said the upcoming Air Defence Command will prevent fratricide*

*By Amrita Nayak Dutta*

New Delhi: The Navy will provide crucial intelligence to the upcoming theatre commands at the northern and western borders once they start taking shape next year, Chief of Defence Staff (CDS) General Bipin Rawat has said.

In a conversation with a limited group of journalists Thursday on integration plans of the Services, Rawat said the process to set up the theatre commands should begin by mid- or late-2021. However, their exact number at the northern and western borders will be based on ongoing threat assessments.

The CDS said while these theatre commands are expected to primarily serve as integration between the Army and the Indian Air Force (IAF), they will require naval assets too.

“I would say there is very much a requirement of a Navy person. There are some resources that the Navy has which can be used at the northern borders. The surveillance resources of the Navy which are used at sea can be effective on land too,” said Rawat, who has the task to improve integration between the three Services as India’s first CDS.

The Navy uses a variety of equipment to carry out maritime surveillance. Out of these, the P8I aircraft and unmanned aerial vehicles (UAVs) could possibly be used on the land borders. For instance, the P8I anti-submarine warfare aircraft was deployed to carry out surveillance on movement of Chinese troops during the 73-day long Doklam standoff between India and China in 2017.

Rawat said the Navy’s fighter aircraft, which is currently limited to operate at the sea, could also be integrated with these theatre commands. The Navy’s fighter aircraft squadron comprise the MiG-29Ks.

The CDS said if the Navy’s fighters have not flown at high altitudes, they could be brought to Jaipur in the Western Command and the existing assets there could be moved to the northern borders for operational roles.

A theatre command will have specific units of personnel from the three services — Army, Navy and Air Force — under a common commander so they fight as a cohesive unit. Both the US and China follow a theatre command doctrine.

“Within three years, the operational directions to get the theatre commands will be issued. Then in some timeline they will be taking shape,” added Rawat.

### **‘Will prevent fratricide’**

As part of the integration process, the three Services’ air defence under an Air Defence Command is the first on the block, said General Bipin Rawat.

Speaking about its expected start, the CDS said, “The study is going on there (on air defence command), and we are quite hopeful that by the end of this year, we should issue the implementing instructions and the coordination should start.



CDS General Bipin Rawat (C) | Photo: Suraj Singh Bisht | ThePrint File Photo

“Gradually in a year or two, the complete air defence should get integrated,” he said.

The CDS said the defence of the airspace is critical and somebody has to be responsible for that. “That responsibility has been given to the IAF. But the resources to defend the air space are with three separate services. Should this not be coordinated? Or should you keep hitting your own aircrafts and UAVs?”

According to him, this integration implies having Air Defence Command operational directives, which will be applicable to the air defence assets of the Army, Navy and the IAF.

“If you have to ensure there is no fratricide, for every weapon system fired in the right time at the right aircraft, the command and control instructions should come from one entity. As of now it’s not,” he said.

On 27 February 2019, a surface-to-air missile of the IAF brought down the force’s own Mi-17 V5 helicopter in Budgam in the Kashmir Valley, killing six personnel on board and a civilian on ground, in a case of fratricide. The incident happened when the IAF and the Pakistan Air Force were engaged in a dogfight, a day after the IAF’s Balakot strikes.

Rawat added that the arrangement will be different under some circumstances. For instance, on a naval ship going to high seas, its air defence resources will be controlled by the person commanding the ship.

The CDS added that an integrated maritime command, which will be under the Navy, is also being studied.

“Today the ships are operational under different commanders, but it is being seen if the command and control of the ships can be exercised by one entity as the maritime commander,” he said.

“That is the next thing we are looking at,” he said, adding that the command could up by early next year.

#### **On communication, training**

General Bipin Rawat also stressed the need for a common communication system as part of the integration. As of now, all three Services use different systems.

“An order is issued by the highest authority should reach the lowest authority in the fastest time frame and that can only happen if your communication is integrated,” he said.

“Training systems, establishments, will be common... the equipment of the services has to be common. Today each one is contracting their own,” he said. “So maintenance and logistics should be common and there will be a huge saving in maintenance.”

The CDS added that there are also plans to integrate the administrative elements of the services as a measure to save costs.

<https://theprint.in/defence/navy-will-provide-crucial-intelligence-to-northern-western-border-theatre-commands-rawat/423106/>

## **THE TIMES OF INDIA**

*Sun, 17 May 2020*

### **INLCU L57 warship commissioned into Indian Navy**

New Delhi: A Landing Craft Utility (LCU) Mark IV warship built by the Garden Reach Shipbuilders and Engineers Limited (GRSE) was commissioned into the Indian Navy at Port Blair on Friday by Lt. General P S Rajeshwar, the commander-in-chief of the Andaman and Nicobar Command.

The warship, INLCU L57, is the seventh LCU Mark IV to be inducted into the Indian Navy, the government-run GRSE said in an official statement.

LCU Mark IV is an amphibious ship with its primary role being transportation and deployment of main battle tanks, armoured vehicles, troops and equipment from ship to shore.

"The first ship of the Mark IV LCU Vessels INLCU L51 was commissioned into Indian Navy in March 2017," the GRSE said.

The entire design of these LCU Mark IV ships has been developed in-house by GRSE as per requirements specified by the Navy, according to the statement.

"The seventh of the eight Landing Craft Utility (LCU) ship INLCU L57, built at GRSE, Kolkata, a Mini Ratna Category 1 and leading shipyard of the country, was commissioned at May 15 at Port Blair by Lt. General PS Rajeshwar," it said.

<https://timesofindia.indiatimes.com/india/inlcu-l57-warship-commissioned-into-indian-navy/articleshow/75777075.cms>



## अमर उजाला

Sun, 17 May 2020

### आईएनएलसीयू एल57 युद्धपोत भारतीय नौसेना में शामिल

नई दिल्ली: बार्ड गार्डन रिच शिप बिल्डर्स एंड इंजीनियर्स लिमिटेड द्वारा निर्मित लैंडिंग क्राफ्ट यूटिलिटी मार्क फोर वॉरशिप को शुक्रवार को पोर्ट ब्लेयर में भारतीय नौसेना में शामिल कर लिया गया। इस प्रक्रिया को अंडमान-निकोबार कमान के कमांडर इन चीफ लेफ्टिनेंट जनरल पी. एस. राजेश्वर के देख-रेख में किया गया।

सरकारी जीआरएसई ने एक आधिकारिक विज्ञप्ति में बताया गया कि युद्धपोत आईएनएलसीयू एल57 भारतीय नौसेना में शामिल किया गया और यह सातवां एलसीयू मार्क फोर वॉरशिप है।

यह जल और थल दोनों पर चलने में सक्षम पोत है और इसका प्राथमिक काम मुख्य युद्धक टैंको, बख्तरबंद वाहन, सैनिकों और साजो-सामान का पोत से तट तक परिवहन करना और उनकी तैनाती करना होगा।

जीआरएसई ने कहा, "मार्क फोर एलसीयू का पहला पोत आईएनएलसीयू एल51 मार्च 2017 में नौसेना में शामिल किया गया था। बयान के मुताबिक इन एलसीयू मार्क फोर वॉरशिप का पूरा डिजाइन जीआरएसई ने नौसेना की जरूरतों के हिसाब से किया है।

<https://www.amarujala.com/india-news/inlcu-l57-warships-join-indian-navy>

## Why India needed to celebrate 75 yrs of end of WW-II

*Personnel from the subcontinent received 4,000 gallantry awards. It's an unsurpassed record of bravery we should be proud of and not something to be hidden in embarrassment*

*By Rahul Singh*

On May 8, 1945, Nazi Germany surrendered to the Allies, marking the end of World War II in the western theatre. In the East, the war lingered on a little longer but virtually ended with the dropping of the devastating atomic bombs on Hiroshima and Nagasaki. Japan's Emperor Hirohito personally signed the unconditional surrender on August 15, 1945. The 75th anniversary of the end of the war was marked last week by celebrations and aerial flypasts in all the countries which were part of the victorious Allied forces, including Russia.

But from India and Pakistan, there was a deafening silence. Why? Because New Delhi — and presumably Islamabad as well — feels that this was a “colonial” conflict and therefore not worthy of any kind of official celebration. What utter nonsense and how disrespectful of the armed forces of the Indian subcontinent who fought so gallantly! At the peak of the war, 25 lakh troops from what is now India, Pakistan, Bangladesh and Nepal were part of the British Indian army, the largest force of volunteers ever assembled in history. They served in major battlefields, from North Africa to Italy and the Far East. The 5th Indian Division, for instance, fought the Italians in Sudan, then the Germans in Libya, before moving to Iraq to protect the oil fields, then was shifted to the Burma and Malaya front, before finally going to Indonesia to disarm the Japanese there.

Personnel from the Indian subcontinent received 4,000 gallantry awards and 31 Victory Crosses, the highest award given by the British for valour in action. It's an unsurpassed record of bravery we should be proud of and not something to be hidden in embarrassment.

In 1962, when I had just graduated from Cambridge and was 22, an English college friend of mine, Charles Noon, and I decided to go overland by car to Egypt's Port Said, from where I would take a ship to Bombay, and he would carry on to Rhodesia, as it was then called, to take up a teaching assignment. Charles had purchased a tiny car, the iconic Morris Mini, for the two-month journey which took us through France, Monaco, mainland Italy, Tunisia, Libya and finally, Egypt. We did everything on the cheap, staying at youth hostels and with friends, sometimes sleeping in the car, or on the beach. We traversed many of the war's battlegrounds. In South Italy, in a town called Monte Cassino, an aged lady came up to me, pointing to my turban (I had long hair and a turban then), jabbering excitedly in Italian. I got hold of a passerby who understood English and asked him what she was saying. He replied that during the war she had seen many soldiers with turbans like mine, which was why she was so excited. She wondered if I was also a soldier! Later, I learnt that a pivotal battle of the war had taken place there, in which 240,000 Allied troops saw action, including the 4th Indian Division (which must have had a lot of Sikhs). It took four assaults, lasting for over a month of bitter fighting, to dislodge the well-entrenched Germans, on top of a hill, where there was a famous monastery (it was left in ruins). The eventual victory paved the way to Rome.

In North Africa, we passed through El Alamein, where two famed adversaries, Erwin Rommel (“The Desert Fox”) and Bernard Law (“Monty”) Montgomery, squared off in an epic encounter. Monty won a decisive victory. In fact, El Alamein and the battle of Stalingrad in Europe broke the back of the Germans. At El Alamein, I visited the war cemetery where 11,886 fallen soldiers from the Commonwealth are commemorated. There were hundreds of Indian names there, emphasising the vital part Indian troops played in that battle. The memory still brings tears to my eyes.

A maternal uncle of mine, Premindra Singh (“Prem”) Bhagat, then a Second Lieutenant in the Corps of Indian Engineers, was on a mine-clearing operation, an extremely hazardous task those days with no fancy gadgets, only the delicate poking of the sand with a bayonet to detect where a mine had been planted. His jeep was blown up, killing the other occupants and injuring him. But he carried on continuously for 96 hours. He was one of only two Indian officers ever to win the Victoria Cross “for his cold courage”, as the citation said. He went on to become a Lt General.

Vital though the role of the Indian army was in the North African theatres, in the East against the Japanese, it was decisive. After the fall of Singapore, the Japanese troops swept through Malaya and Burma and were knocking on India’s doors, with the intention of taking over the whole country (the only part of India they occupied were the Andamans). They were stopped at Kohima. There, on a tennis court and in the surrounding areas, some of the closest and bloodiest fighting of WW-II took place. Over 7,000 men on both sides died in just 64 hours. After that, the retreating Japanese forces suffered one defeat after another. The worst was at the Second Battle of Sittang river, where the 28th Japanese Army was annihilated. Of 20,000 men, only 7,000 survived. The casualties on the British and Indian side were just 95.

Earlier, Louis Mountbatten, Supreme Commander of the Allied forces in Burma, had been taunted that though Indians made good soldiers, they weren’t capable of leading. He decided to show that they could be outstanding officers as well. He chose three: Shankarrao Pandurang Patil Thorat (incidentally, the maternal grandfather of actor Rahul Bose), Lionel Protip (“Bogey”) Sen, and Kodandera Subayya Thimayya (they would go on to become among the most distinguished Generals of Independent India, while Thimayya became India’s third Army Chief). Mountbatten put them in command of large army formations and they won key battles against the Japanese.

The role of the Indian armed forces in World War II was an outstanding one. It should have been celebrated, not seen as part of an embarrassing “colonial” conflict.

*(The writer is a veteran journalist)*

<https://www.tribuneindia.com/news/comment/why-india-needed-to-celebrate-75-yrs-of-end-of-ww-ii-85879>

## Business Standard

Sun, 17 May 2020

# 'Make in India' campaign: Private shipyards play second fiddle to DPSUs

*Goa shipyard supplies first patrol vessel, but L&T has better record*

*By Ajai Shukla*

New Delhi: With Defence Minister Rajnath Singh commissioning three new ships on Friday, the Indian Coast Guard (ICG) – the world’s fourth largest – crossed the landmark of 150 ships, most of them built indigenously.

The vessels, commissioned in Goa via video conferencing from Delhi, included the Indian Coast Guard Ship (ICGS) Sachet, designed and built by Goa Shipyard Limited (GSL). In addition, Rajnath Singh commissioned two fast interceptor boats (IBs), built by Larsen & Toubro (L&T) at its Hazira Shipyard.

“Despite challenges like Covid-19, it is a great example of our commitment and determination for the safety and security of



Naval industry analysts say the comparison is valid because the L&T and GSL OPVs are very similar in size and performance

the country... It is noteworthy that Indian shipyards are making significant contribution to the vision of 'Make in India' and 'Self-reliant India' campaign which was recently inspired by our Prime Minister," said Rajnath.

Yet a comparative analysis of ongoing OPV manufacture by GSL and L&T reveals that the private sector firm has delivered clearly better outcomes than the defence public sector undertaking (DPSU).

In terms of cost, L&T has charged the ICG an average of Rs 187 crore for each of the seven OPVs it contracted in 2015 to build at its new shipyard at Katupalli, near Chennai in Tamil Nadu. In contrast, GSL is charging the ICG about Rs 320 crore for each of the five OPVs it contracted to build in 2016 – more than 60 per cent costlier.

In terms of build time, GSL has taken four years to deliver the first OPV. In contrast, L&T will have taken just five years to deliver its sixth OPV later this year. The seventh and last OPV will be delivered next year within six years of inking the contract. Each of these OPVs has been delivered ahead of schedule.

Naval industry analysts say the comparison is valid because the L&T and GSL OPVs are very similar in size and performance. Both are almost the same size: GSL's OPVs displace 2,350 tonnes, compared to the 2,140 tonnes displaced by L&T's ship.

In terms of performance, the OPVs built by L&T have a maximum speed of 26 knots and an operating endurance of 5,000 nautical miles. The OPVs built by GSL are slower at 23 knots, but have slightly longer sea legs with an endurance of 6,000 nautical miles.

The only significant capability advantage the GSL vessels have over the L&T OPVs is the fitment of three weapons on each – one 30-millimetre (mm) gun and two 12.7 mm guns – to engage hostile targets. While GSL is supplying OPVs with these guns fitted, L&T is contractually required to kit the OPVs to fit these guns later. However the cost of all three guns is below Rs 10 crore.

Notwithstanding its demonstrated capability, which includes building the hulls of India's nuclear missile submarines, L&T finds it hard to compete against the four public sector shipyards – GSL, Mazagon Dock Ltd, Garden Reach Shipbuilders and Engineers and Hindustan Shipyard Ltd. That is because the DPSU yards are handed over contracts on "nomination basis" by the ministry of defence (MoD), especially for building bigger naval warships such as corvettes, frigates and destroyers.

Those large contracts allow the DPSU shipyards to cross-subsidise low bids in competitive tenders where private sector shipyards are permitted.

Even so, private shipbuilders, especially L&T, have begun scoring in competitive contracts, such as the Rs 750 crore contract to design and build 12 Fast Patrol Vessels for the Vietnam Border Guard. Despite Covid-19 related delays, L&T is well ahead of schedule in construction.

Having sunk over Rs 3,500 crore into building its Katupalli shipyard, the stakes are high for L&T in the first major warship contract the private sector has been allowed into: the Rs 13,600 crore contract to build six New Generation Missile Vessels (NGMVs).

[https://www.business-standard.com/article/economy-policy/make-in-india-campaign-private-shipyards-play-second-fiddle-to-dpsus-120051600062\\_1.html](https://www.business-standard.com/article/economy-policy/make-in-india-campaign-private-shipyards-play-second-fiddle-to-dpsus-120051600062_1.html)



## GSL makes lowest bid to build oil spill control ships

Panaji: Goa Shipyard Ltd has emerged as the front runner to build two pollution control vessels for the Indian Coast Guard, pipping L&T Shipbuilding and two other public sector shipyards. GSL will build the vessels for approximately Rs 600 crore once the final contract is inked, chairman and managing director of GSL, Bharat Bhushan Nagpal said.

GSL is already executing a follow-on order for five offshore patrol vessels for the Coast Guard, the first of which was commissioned on Friday.

“GSL has emerged as lowest bidder to build two pollution control vessels. This is a Rs 600 crore project for the Indian Coast Guard,” Nagpal said.

Contract negotiations for the two pollution control vessels will begin with the defence ministry and the Indian Coast Guard, and once the terms are decided, the contract will be inked.

“In another two or three months we hope that the contract will be signed. The build period is 46 months for delivery,” Nagpal said.

The ongoing novel coronavirus pandemic has affected the entire supply chain logistics and has also forced GSL to put in place additional precautionary measures. “We have isolated each section at the shipyard. We are now operating in two shifts and each shift does not interact. We are also sanitising everything in between shifts,” Nagpal said.

Speaking about the stealth frigates that GSL is building for the Indian Navy, Nagpal said that though slightly delayed, the pace will pick up in the coming weeks. “We will be receiving drawings from Russia by end of May. We have already ordered the plates and should commence production by July or at the latest by early August,” Nagpal said.

The keel for the first of the two guided missile frigates for the Indian Navy, known as Project 1135.6, were to be laid in early 2020. The stealth warships, valued at over Rs 14,250 crore, will be built at GSL based on technology transfer from Russia’s Yantar Shipyard and Severnoye Design Bureau.

<https://timesofindia.indiatimes.com/city/goa/gsl-makes-lowest-bid-to-build-oil-spill-control-ships/articleshow/75783143.cms>

ज्ञान प्रसार एवम् विस्तार  
के एन नर्ष



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Sun, 17 May 2020

## Pakistani JF-17s would be ‘Sitting Ducks’ for soon to arrive Rafale Fighter Jets: Experts


India is set to receive the first batch of Rafale fighter jets by the end of July amid rising tensions with Pakistan and China. Many experts have already termed the Rafale jets a game-changer for the Indian Air Force that can overwhelm anything that Pakistan or China have in their arsenal.



The final date for the arrival of the Rafale Jets is yet to be determined and there is a likelihood of a delay COVID-19 lockdown in India and France. As per schedule, the delivery of the French-origin jets was earlier supposed to have been completed by May end but this got delayed due to the COVID-19 pandemic.

“The first four jets including three twin-seater trainer aircraft and one single-seater fighter aircraft would start arriving by the end of July at the Ambala airbase. The trainers will have the tail

numbers of the RB series in honour of the Air Force Chief RKS Bhadauria who played a pivotal role in clinching India’s biggest-ever defence deal for 36 Rafale combat aircraft,” defence sources told ANI here.

According to ANI, the Rafale jets on their way from France to India would be refuelled by a French Air Force tanker aircraft in the air before they halt in the Middle East. From the Middle East to India, there would be one mid-air fuelling done by the Indian IL-78 tanker before they land in the country.




 Will give the IAF a cutting edge capability over arch rival Pakistan  
 IAF would be able to hit targets inside both Pakistan and across the northern and eastern borders while staying within India's territorial boundary

**India and France sign the deal for 36 Rafale Fighter Jets**

**The deal comes with 50% offset clause - Indian businesses will gain work to the tune of 3+ billion Euros**  
**Deal Cost: Euro 7.87-billion**  
**Delivery: starts in 36 months**  
**Complete: in 66 months**

**Multirole fighter | Origin: France | Manufacturer: Dassault**  
**First flight: 4 July 1986 | Introduction: 18 May 2001**  
**Primary users:** French Air Force, French Navy, Egyptian Air Force, Qatar Air Force, Indian Air Force  
**Produced:** 1986–present  
**Number built:** 154 (as of July 2016)  
**Program cost:** €45.9 bn (FY2013) (US\$62.7 bn)  
**Unit cost:**  
 Rafale B: €74M (flyaway cost, FY2013)  
 Rafale C: €68.8M (flyaway cost, FY2013)  
 Rafale M: €79M (flyaway cost, FY2011)

Specifications	Performance	Armament
<b>Crew:</b> 1–2 <b>Length:</b> 15.27 m (50.1 ft) <b>Wingspan:</b> 10.80 m (35.4 ft) <b>Height:</b> 5.34 m (17.5 ft) <b>Wing area:</b> 45.7 m <sup>2</sup> (492 ft <sup>2</sup> ) <b>Empty weight</b> 10,300 kilograms (22,700 lb) (B) 9,850 kilograms (21,720 lb) (C) 10,600 kilograms (23,400 lb) (M) <b>Loaded weight:</b> 15,000 kg <b>Max. takeoff weight :</b> 24,500 kilograms <b>Powerplant :</b> 2 × Snecma M88-2 turbofans <b>Fuel capacity:</b> 4,700 kg (10,360 lb) internal	<b>Maximum speed</b> High altitude: Mach 1.8 (1,912 km/h, 1,032 knots) Low altitude: Mach 1.1 (1,390 km/h, 750 knots) <b>Range :</b> 3,700+ km (2,000+ nmi) with 3 drop tanks <b>Combat radius :</b> 1,852+ km (1,000+ nmi) on penetration mission <b>Service ceiling :</b> 15,235 m (50,000 ft) <b>Rate of climb :</b> 304.8+ m/s (60,000+ ft/min) <b>Wing loading :</b> 328 kg/m <sup>2</sup> (67.1 lb/ft <sup>2</sup> ) <b>Thrust/weight:</b> 0.988 (100% fuel, 2 EM A2A missile, 2 IR A2A missile)	<b>Guns:</b> 1× 30 mm (1.18 in) GIAT 30/M791 autocannon with 125 rounds <b>Hardpoints :</b> 14 for Air Force versions (Rafale B/C), 13 for Navy version (Rafale M) with a capacity of 9,500 kg (20,900 lb) external fuel and ordnance and provisions to carry combinations of <b>Missiles:</b> Air-to-air: 3 Air-to-ground: 5 Air-to-surface: 2 Nuclear Deterrence: ASMP-A nuclear missile Other: 5



**BT! GRAPHICS** Source: Wikipedia

Meanwhile, the first batch of seven Indian pilots has also completed their training at a French airbase while the second batch would be going to France as soon as the lockdown measures are eased in both countries.

Rafale fighter jet is a twin-jet fighter aircraft manufactured by French-based Dassault Aviation. Rafales are able to operate from both, shore bases and aircraft carriers.

<https://www.defenceaviationpost.com/2020/05/pakistani-jf-17s-would-be-sitting-ducks-for-soon-to-arrive-rafale-fighter-jets-experts/>

# The Tribune

Sun, 17 May 2020

## Army to outsource tank repairs to private parties

By Ajay Banerjee

New Delhi: Indian Army is set to outsource repair and maintenance of its Russian-origin tank fleet of T-72 and T-90 tanks to private companies.

Bids have been invited from private vendors by asking the how they would undertake operations of Delhi-based 505 Army Base Workshop (ABW). The Army has used what they call “Government Owned Corporate Operated” (GOCO) model to describe this. Under provisions of GOCO, mooted in 2017, infrastructure and facilities of ABWs will remain under the ownership of the government while the contractors will be responsible for the day-to-day operations, plant maintenance and meeting targets.



India operates some 3,600 tanks of these two types, including some 1200 T-90 tanks and 2,400 T-72 tanks.

This is part of the government’s plan to rationalise Army manpower and reduce the “tail” as recommended by the Lt Gen DB Shekatkar committee in 2016. A Committee of Experts (CoE) under the Chairmanship of Lt Gen DB Shekatkar (Retd), was constituted in 2016 recommended outsourcing the functioning of the ABWs to private sector players.

The first stage of the bid called the Request for Information (RFI) has been sent out.

The Ministry of Defence (MoD) has barred its own Public Sector Undertakings (PSU) and also the Ordnance Factories from bidding.

The 505 Army Base Workshop has carried out repairs of tanks as well as engines and major/minor assemblies of tanks. It currently overhauls 70 of the T-72 tanks annually and its associated engine, assemblies.

From this financial year, the 505 ABW is scheduled to start all these activities for T90 tanks.

Eight Army Base Workshops were established by the British during the Second World War (1939-1945) to carry out repairs and overhaul of weapons, vehicles and equipment to keep the Indian Army operationally ready.

<https://www.tribuneindia.com/news/nation/army-to-outsource-tank-repairs-to-private-parties-85636>

## A giant leap! Boost to private participation in space programme

*Over the last five decades, ISRO has launched over a hundred space missions to advance its Space technology*

*By Huma Siddiqui*

For the first time, in an effort to promote Make in India in the space sector, the government has decided to open it up for private participation. In April the Indian Space Research Organization (ISRO) came out with the Announcement of Opportunity (AO) document where Human Space Program innovations and creative technologies for space explorations are required. The idea behind this is to ensure widening of scientific knowledge, economic growth, value addition to the quality of life of a common man and thus national development.

### **Interest areas:**

Radiation Hazards Characterisation and Mitigation Techniques; Space Food and Related Technologies; Inflatable Habitats Technology; Human Robotic Interfaces; Thermal Protection Systems; Environmental Control And Life Support Systems; Green Propulsion; Advanced Materials; Debris Management and Mitigation; Energy Harness And Storage; In-situ 3D Manufacturing Technologies For Space; Fluid Technology and Management; Space Bioengineering; Bio-Astronautics; Simulated Gravity Technologies; Human Psychology For Long Term Missions; Space Medicine And Diagnosis; Any Other Relevant Technology Related To Human Space Programme.

### **Conditions for the Opportunity**

Milind Kulshreshtha, C4I expert, says, "ISRO has detailed various conditions of the developmental work. However, the developed payloads shall not be allowed to carry any chemical or nuclear substances, biological samples that are prohibited by the COSPAR (Committee on Space Research ) guidelines on planetary protection. It shall be the responsibility of participating Organisation to ensure that payloads shall not result in any harmful contamination of the outer space environment. Some restrictions have been put on the selected developmental Organisation such as the developed the proposal shall not be allowed to be used for marketing or business purposes without prior permission from Government of India."

"The Intellectual Property Rights (IPR) such as patents, design rights etc. acquired shall be jointly owned by ISRO and the Research institute under all circumstances, irrespective of workshare or budget share. The commercialization of such IP rights is allowed only with the consent/permission of ISRO, on mutually agreed specific terms and conditions, which shall be determined on a case by case basis by ISRO," Kulshreshtha adds.

### **India's Recent Space Initiatives**

Over the last five decades, ISRO has launched over a hundred space missions to advance its Space technology. India has to-date launched two Lunar missions viz. Chandrayaan-1 and Chandrayaan-2, with Chandrayaan-2 being partially successful since the Lander crash-landed on the Lunar surface and rendered non-usable. In 2014, India setup an orbiter in the Mars orbit, thereby proving its space travel capabilities. ISRO's mission Gaganyaan is to launch a first manned rocket carrying Indian astronauts into space from Indian soil.

The Human Spaceflight Centre (HSFC) of the ISRO is responsible for the Gaganyaan Project, from mission planning, Systems Engineering for human survival in space, up to the stage of crew selection and training.

“With a vibrant Space launch programme of ISRO, and need to develop sophisticated technologies by Space community, capable and deserving Private sector players, including MSMEs now have an opportunity available for specialization in the field of science and technology,” the C4I expert states.

<https://www.financialexpress.com/lifestyle/science/a-giant-leap-boost-to-private-participation-in-space-programme/1961618/>

**hindustantimes**

Sun, 17 May 2020

## **Private firms to get access to ISRO's facilities, space exploration opportunities**

*The government's announcement of reforms in the space technology sector is part of the self-reliant India mission announced by PM Narendra Modi*

*By Abhinav Sahay*

New Delhi: The government on Saturday announced enhancing of private partnership in the space sector in a move to further encourage private investments in space technology development, exploration and capacity building. The reform will also open up Indian Space Research Organisation's facilities for use by private players.

Finance minister Nirmala Sitharaman made the announcement while delivering the 4th chunk of the Rs 20 lakh crore Aatma Nirbhar Bharat Special Economic Package, aimed to transform the Indian economy into a self-reliant system. Sitharaman said the opening up of the space sector was likely to provide a level playing field for private companies in satellites, launches and space-based services.

“India has the benefit of an extraordinary institution like the ISRO. ISRO has brought the country many laurels; however, today the private sector is also doing a lot of work in the space arena and a lot of individuals and start-ups have spent a lot of time developing space-related technology but unfortunately due to Indian regulations, they are unable to use ISRO's available facilities for even testing their products,” said Sitharaman.

In India, companies like Solar Industries India, Skyroot Aerospace, Godrej Space and L&T are already working with ISRO on rocket systems and other space-related technologies.

Sitharaman said the government will provide predictable policy and regulatory environment to private players to encourage their participation.

They will also be allowed to use ISRO facilities and other relevant assets to improve their capacities, she added.

She made it clear that the extent of private participation also included future projects for planetary exploration, outer space travel etc.

In addition to the above, she also promised a liberal geospatial data policy for providing remote sensing data to tech entrepreneurs.

The reform is likely to help overcome the manpower and budgetary limitations holding back the development of the sector in India. The demand for the launch of satellites is growing and ISRO has indicated that it doesn't have enough manpower to meet the growing demand and will look at private participation to augment the overall capacity.

<https://www.hindustantimes.com/india-news/private-firms-to-get-access-to-isro-s-facilities-space-exploration-opportunities/story-5vQriboni9O33WeiUsO8GI.html>

### COVID-19 vaccine current status: Here are the 9 top contenders for coronavirus vaccines

Even as countries toy with the idea of relaxing lockdown and restarting life in the COVID era, the novel coronavirus continues to claim more lives. As of now, COVID-19 has infected more than 4.5 million people across the world and caused 3,03,651 fatalities. At the same time, scientists and medical researchers are working tirelessly to develop potential treatments and vaccine for the highly infectious new coronavirus disease. There are 7 or 8 top candidates for COVID-19 vaccine: WHO

The World Health Organization has also identified top 7 or 8 candidates for COVID-19 vaccines. WHO Director-General Tedros Adhanom Ghebreyesus elaborated in UN Economic and Social Council video briefing that accelerated efforts are currently underway aided by 8 billion dollars pledged by leaders from 40 countries.

Meanwhile, health experts remain cautious and are strictly advising everyone to stay indoors and practise social distancing. This is to ensure that the health care systems are not overwhelmed and researchers and experts have more time to work on a potential vaccine candidate. Here are the latest updates on the potential COVID-19 vaccines:

#### Moderna vaccine

The US-based Moderna Therapeutics said that it had received approval from the FDA (US Food and Drug Administration) to conduct the phase 2 clinical trials of its potential COVID-19 vaccine candidate. It is important to note that Moderna has already conducted phase 1 trials of its vaccine candidate mRNA-1273 in Seattle, Washington. The RNA vaccine candidate was tested on 45 healthy volunteers, who were injected 28 days apart.

This vaccine carries the molecular instructions for the human cells and instructs them to make the viral protein. This kickstarts the body's immune system to fight the virus.

Moderna Inc. will conduct phase 2 trial on 600 healthy volunteers. The participants will be in two groups, one of them will be between the age of 18-55 years old, while the other group will have individuals over 55 years old. The candidates will be given two shots of the mRNA-1273 vaccine candidate, 28 days apart.

#### Novavax vaccine

One of the top candidates of the potential COVID-19 vaccine, Novavax Inc recently received funding of 388 million dollars from the Coalition for Epidemic Preparedness Innovation. According to Dr Gregory Glenn, president of research and development for Novavax, the vaccine candidate NVX-CoV2373 has shown promising results. The biotech company will move on to conduct human trials on 130 volunteers from Australia. The vaccine candidate has been engineered from a genetic sequence of the SARS-COV-2 virus and single and double dose of the vaccine showed great promise on baboons and mice.

#### INOVIO Pharmaceuticals

INOVIO Pharmaceuticals is developing a DNA-based vaccine candidate in its San Diego lab. The biotechnology company also received a 6.9 million dollars funding from the Coalition for Epidemic Preparedness Innovations (CEPI). The Plymouth Meeting-based biopharmaceutical company completed phase 1 of clinical study on 40 healthy volunteers.

It is important to note that INOVIO went from producing a vaccine to conducted trails in a span of just 83 days. Phase 2 of the trial is slated for the last week of May where the 40 volunteers will be injected with its vaccine candidate INO-4800. The result of the safety and efficiency of the potential COVID-19 vaccine is expected to be out by the end of June, after which the biotech company will begin the phase 2/3 of the trial.

#### **Pfizer and BNTECH vaccine**

US drugmaker Pfizer has teamed up with a German company BNTECH to develop a vaccine for COVID-19. Both the companies are working together on four RNA vaccine candidates. Their vaccine candidate 'BNT162' is based on messenger RNA (mRNA) technology and the company has already begun clinical trials in Germany. They are planning to start dosing patients for the US-based clinical trials in early July. For the trial of its four potential vaccine candidates, 360 healthy individuals will be given different dosing regimes.

#### **Johnson & Johnson vaccine**

Another major player in the development of potential vaccine, Johnson & Johnson is currently working on an adenovirus-based vaccine and plans to initiate a Phase 1 clinical study in September 2020. The company also claims to ramp up its manufacturing capacity to produce around 1 billion doses of its potential vaccine by the end of 2021, if approved. J & J expects that the first batch of the vaccine will be available for emergency use by early 2021.

#### **CanSino Biologics**

Chinese vaccine maker CanSino Biologics Inc is developing a potential vaccine for COVID-19 and has been listed by WHO as one of the top contenders. The company is currently working on Adenovirus Type 5 Vector using a Non-Replicating Viral Vector platform to develop its vaccine. The Ad5-nCoV vaccine candidate already moved into clinical trials in the month of April and its Phase 1 of the trial is expected to end in December 2020. For the uninitiated, CanSino Biologics Inc has already manufactured an approved vaccine for Ebola.

#### **Sinovac Biotech**

Beijing-based Sinovac Biotech is working on China's one of the most promising vaccine candidate for COVID-19 disease. It has already commenced phase 1 trial and the first dosing of the vaccine for the volunteers has been completed. Earlier, its vaccine candidate PiCoVacc had shown to successfully induce virus-specific neutralizing antibodies in animal trials.

The company had injected two different doses of its potential vaccine into eight monkeys, four of them were given high dosage of the vaccine and the other four were given low dosage.

The macaque monkeys who had received high dosage were largely protected against SARS-CoV-2 infection and did not have detectable traces of the virus in their lungs. However, those who were given a low dosage showed an increased viral load in their bodies, but the company said that it appeared to control on its own.

Sinovac had previously developed a vaccine against SARS but had to stop the production at phase 1 as the disease was contained.

#### **University of Oxford**

A potential coronavirus vaccine is being developed by the University of Oxford and it has partnered up with UK-based AstraZeneca for the same. The vaccine 'ChAdOx1 nCoV-19' was developed under three months by the University's Jenner Institute. To make the vaccine work, the scientists used a weakened strain of common cold virus (adenovirus) that causes infections in chimpanzees.

While a clinical trial on humans already began in late April, the medical experts conducted an important trial on monkeys. Six monkeys were infected with SARS-CoV-2 virus and the potential vaccine given to them appeared to prevent damage to the lungs. They expect to begin a late-stage clinical trial by the middle of this year.

## Sanofi vaccine

French pharmaceutical group Sanofi had initiated stated that the US will be given first access to the COVID-19 vaccine whenever it develops as “the US government invested in taking the risk.” For the uninitiated, US agency Biomedical Advanced Research and Development Authority was the first in line to fund the Sanofi’s vaccine research. However, after a backlash from the French government, the French pharmaceutical company released a statement on Thursday that the vaccine will be available for all the nations.

To develop a vaccine to fight the novel coronavirus, Sanofi has partnered with U.K. rival GlaxoSmithKline Plc. As per the Head of Sanofi Vaccine R&D John Shiver, Sanofi is using an existing technology that was designed for influenza, and they are applying it to the new virus that causes COVID-19 disease. The official website of the pharmaceutical group further states that the candidate vaccine is expected to enter clinical trials in the second half of 2020 and to be available by the second half of 2021.

## The status of COVID-19 vaccine in India

India will begin clinical trials of its Bacille Calmette-Guérin (BCG) vaccine on 6000 high-risk individuals. It will be done to understand its safety and efficacy in boosting immunity in the fight against COVID-19 disease and whether or not the BCG shots can reduce the severity of this highly infectious disease.

The Bacillus Calmette-Guerin (BCG) vaccine is used against tuberculosis to boost the immunity of the individual.

Bharat Biotech International Ltd (BBIL) has teamed up with the Indian Council for Medical Research (ICMR) to develop a COVID-19 vaccine. One of the world’s largest vaccine maker of the world by volume, Pune’s Serum Institute of India is working with the University of Oxford to make millions of potential coronavirus vaccine doses. The Indian government has also allocated Rs 100 crore from the PM-CARES fund to support the initiative of producing a COVID vaccine.

<https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/coronavirus-vaccine-latest-update-news-covid-19-vaccine-current-status-here-are-the-9-top-contenders-for-coronavirus-vaccines/photostory/75773344.cms?picid=75773397>

**THE HINDU**

ज्ञान प्रसार एवम् विस्तार Sun, 17 May 2020

## TechM leverages AI for COVID-19 drug research

*Collaborating with renowned bio-scientist for plausible therapeutic drugs, research labs*

*By Piyush Pandey*

Mumbai: Makers Lab, the research and development (R&D) arm of information technology (IT) firm Tech Mahindra Ltd., has leveraged artificial intelligence (AI) to conduct research and find potential therapeutic drugs for treatment of COVID-19.

“Testimony of a strong synergy among academia, businesses and independent researchers to fight a global pandemic, Tech Mahindra is also collaborating with a renowned bio-scientist for plausible therapeutic drugs and research laboratories for synthesising and testing these compounds,” the company said in a statement.

C.P. Gurnani, MD & CEO, Tech Mahindra, said, “The COVID-19 disease continues to disrupt the socio-economic order, impacting lives and livelihood globally. As a leading global digital transformation provider, Tech Mahindra is not only committed to ensure the well-being of our employees, customers and partner ecosystem, but also invested in finding a potential cure for COVID-19 by leveraging cutting edge and futuristic technologies like Artificial Intelligence.”



Tech Mahindra's Makers Lab aims to promote technology innovation and recognize transformative ideas that have a potential to make a difference and create disruptive solutions to solve real world problems.

Nikhil Malhotra, Global Head of Makers Lab, Tech Mahindra, said, "Our objective was to prevent the entry of virus into human host cells such as lung airway epithelial cells. This is important because the high transmission rates of COVID-19 is attributed partly to the high affinity binding and entry of the virus into host cells. Once the virus cannot enter the host cell, it is harmless. Our strategy included finding a GRAS (generally recognized as Safe) agent which can inhibit the virus and we have successfully utilised two areas of research, one is Molecular docking on approved FDA compounds and medicines. Use of Artificial Intelligence helped the research team to evaluate multiple scenarios with different parameters while finding how molecules dock with the main protease."

The R&D team has used Molecular docking approach because of high transmission rates of COVID-19.

The technique, molecular docking, enables search for therapeutically potent drugs and molecules in real time, to find compounds which can act as inhibitors against a viral protein computationally.

Tech Mahindra conducted molecular docking studies across 19 FDA (Food and Drug Administration) approved ligands and anti-viral drugs on the main protease of the virus.

"There is more work needed to be done to move the process from molecular docking to actual drug design, testing and drug development at scale. This is just the first step, where computational analysis can reduce the amount of time taken to narrow down the search amongst the vast array of molecules present in the process of finding a cure to COVID-19," said the statement.

<https://www.thehindu.com/business/techm-leverages-ai-for-covid-19-drug-research/article31603536.ece>

**MarketWatch**

Sun, 17 May 2020

## **Coronavirus droplets caused by talking remain in the air for 8-14 minutes, new study says**

*New peer-reviewed research gives more insight into COVID-19's rapid contagion*

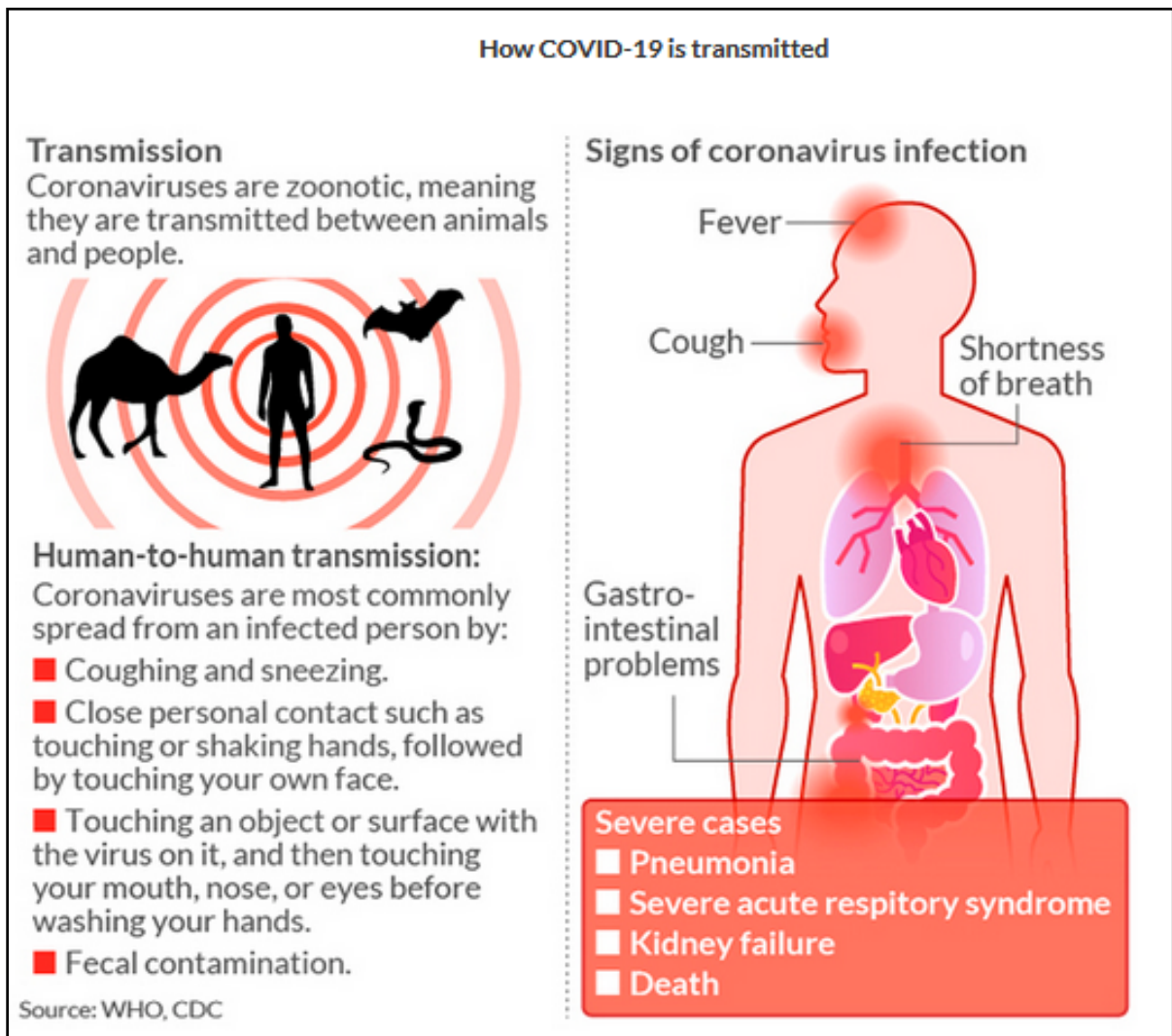
*By Quentin Fottrel*

Talking spreads coronavirus — and likely plays a part in its contagiousness.

That's the conclusion of a new study released Thursday published in the peer-reviewed Proceedings of the National Academy of Sciences, the official journal of the National Academy of Sciences. "These observations confirm that there is a substantial probability that normal speaking causes airborne virus transmission in confined environments," the study concludes.

'Speech droplets generated by asymptomatic carriers of SARS-CoV-2 are increasingly considered to be a likely mode of disease transmission.' study published in the Proceedings of the National Academy of Sciences.

The study adds to a growing body of research on why it's important that people maintain social distancing and wear face masks. The response to COVID-19 has become a political issue. President Donald Trump and New York Gov. Andrew Cuomo have locked horns over when to reopen the economy.



“Speech droplets generated by asymptomatic carriers of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are increasingly considered to be a likely mode of disease transmission,” the study found. “Highly sensitive laser light scattering observations have revealed that loud speech can emit thousands of oral fluid droplets per second.”

In a closed, stagnant-air environment, they disappear from view after 8 minutes to 14 minutes, “which corresponds to droplet nuclei of ca. 4µm diameter, or 12µm to 21µm droplets prior to dehydration,” the researchers wrote. One micrometer, µm, is equivalent to one millionth of a meter. The coronavirus is 0.125 µm. Medical-grade N95 masks are worn by medics because they can block particles of that size.

The scientists said that, while it’s long been recognized that respiratory viruses such as coronavirus can be transmitted via droplets generated by coughing or sneezing, it’s less widely known that normal speaking also produces thousands of oral fluid droplets. High viral loads of SARS-CoV-2 have been detected in oral fluids of COVID-19–positive patients, including asymptomatic ones.

Some public spaces appear to be more hostile environments to coronavirus than others, according to a separate study published in the journal *Nature Research* by a team of investigators, led by Ke Lan, professor and director of the State Key Laboratory of Virology at Wuhan University in the Chinese region where COVID-19, the disease caused by SARS-CoV-2, was first reported.

Room ventilation, open space, sanitization of protective apparel, and proper use and disinfection of toilet areas can help reduce droplet spread.

High-traffic areas are best to be avoided, especially where there's moisture. After setting up traps for small aerosols (airborne particles) in two hospitals in Wuhan, the researchers found more coronavirus aerosols in patients' bathrooms and in changing rooms for doctors. "The potential for aerosol transmission is poorly understood," the researchers wrote.

The study had some good news for hospitals: There were fewer aerosols in isolation wards and patient rooms with good ventilation and thorough sanitization, that study found. "Our results indicate that room ventilation, open space, sanitization of protective apparel, and proper use and disinfection of toilet areas can effectively limit the concentration of SARS-CoV-2 RNA in aerosols," they wrote.

Public transportation is also a hot spot, according to a working paper released on April 24 by Jeffrey Harris, professor in the Department of Economics at the Massachusetts Institute of Technology: "Maps of subway station turnstile entries, superimposed upon zip code-level maps of reported coronavirus incidence, are strongly consistent with subway-facilitated disease propagation."

The number of cases, meanwhile, continues to rise. As of Saturday, 10.7 million people had been tested in the U.S. for SARS-CoV-2. There were 1,444,870 confirmed cases, and 87,643 deaths in the U.S., of which 27,878 were in New York. Worldwide, there were 4,570,370 confirmed cases and 308,317 deaths, according to Johns Hopkins Whiting School of Engineering.

#### **Studies find coronavirus droplets can travel 6 to 13 feet**

Another study in The New England Journal of Medicine from scientists at Princeton University, UCLA and the National Institutes of Health concluded that the virus could remain airborne for "up to 3 hours post aerosolization." It was detectable in the air for up to three hours, up to 4 hours on copper, up to 24 hours on cardboard, and 2-3 days on plastic and stainless steel.

"Once airborne, speech-generated droplets rapidly dehydrate due to evaporation, thereby decreasing in size and slowing their fall."

Health professionals recommend you remain at least 6 feet away from others, but an investigation by researchers led by a team at the Academy of Military Medical Sciences in Beijing, published in Emerging Infectious Diseases, an open-access peer-reviewed journal published monthly by the Centers for Disease Control and Prevention, said droplets can spread up to 13 feet.

The life span of the virus will also vary, depending on the type of surface it is on, temperature and/or humidity. Bathrooms are a welcoming environment for coronaviruses. "Previous coronaviruses can remain viable in cold, moist surfaces up to nine days," Ostrosky said. So if you are sharing a home with someone who has coronavirus, he strongly advises against sharing the same bathroom.

As for traveling, in-flight oxygen on airplanes is likely of higher quality than the air in your home. "If you have an infected person in the front of the plane, and you're in the back of the plane, your risk is close to zero simply because the area of exposure is thought to be roughly six feet from the infected person," according to Charles Chiu, professor of laboratory medicine at University of California, San Francisco.

The good news: The terminal velocity of a falling coronavirus droplet scales as the square of its diameter, the latest study concluded. "Once airborne, speech-generated droplets rapidly dehydrate due to evaporation, thereby decreasing in size and slowing their fall," they wrote. The volume of the speech, age of the speaker and dehydration of the oral cavity during breathing all play a role.

"The amount by which a droplet shrinks upon dehydration depends on the fraction of nonvolatile matter in the oral fluid, which includes electrolytes, sugars, enzymes, DNA, and remnants of dehydrated epithelial and white blood cells. Whereas pure saliva contains 99.5% water when exiting the salivary glands, the weight fraction of nonvolatile matter in oral fluid falls in the 1% to 5% range."

<https://www.marketwatch.com/story/speaking-causes-airborne-virus-transmission-coronavirus-study-gives-more-insight-into-the-diseases-rapid-contagion-2020-05-14>

## Coronavirus: Canada approves first clinical trial of potential COVID-19 vaccine

*Trudeau said the National Research Council of Canada will work with the manufacturers of the potential vaccine so that it will be able to be manufactured domestically should the trials be successful*

Ottawa: The first Canadian clinical trial for a potential COVID-19 vaccine has been officially approved, according to Canadian Prime Minister Justin Trudeau.

At his press conference in Ottawa on Saturday, Trudeau said the Canadian Center for Vaccinology at Dalhousie University has been given the green light by Health Canada to begin clinical trials of the vaccine candidate, Xinhua news agency reported.

"If these vaccine trials are successful we could produce and distribute it here at home," Trudeau said. "Research and development take time, and must be done right, but this is encouraging news."

Trudeau said the National Research Council of Canada will work with the manufacturers of the potential vaccine so that it will be able to be manufactured domestically should the trials be successful.

As of Saturday afternoon, at least 75,770 cases of COVID-19 were confirmed, with 5,677 deaths in the country.

Health Canada reportedly has authorized 33 clinical trials for supportive care or treatments for COVID-19 to date.

On May 12, the National Research Council of Canada announced a collaboration with CanSino Biologics Inc. (CanSinoBIO) to advance bioprocessing and clinical development in Canada of a candidate vaccine against COVID-19.

Referred to as Ad5-nCoV, the vaccine candidate received Chinese regulatory approval earlier this year, allowing CanSino Biologics to move ahead with human clinical trials in China.

It is one of only a handful of vaccine candidates in the world against COVID-19 so far approved for initial safety testing in humans, and was the first candidate vaccine to begin conducting Phase II human clinical trials.

By bringing their respective technologies and expertise together to fight COVID-19, CanSino Biologics and the National Research Council of Canada are aiming to pave the way for future clinical trials in Canada, in collaboration with the Canadian Immunization Research Network at the Canadian Center for Vaccinology. The vaccine is subject to approval by Health Canada, for which CanSinoBIO is in the process of filing a Clinical Trial Application.

The Ad5-nCoV was developed using technology from both China and Canada. It was co-developed by the Beijing Institute of Biotechnology (BIB) and CanSino Biologics Inc. using a genetically engineered replication-defective adenovirus type 5 vector to express the SARS-CoV-2 spike protein, which is grown using living cells that were designed and developed at the National Research Council of Canada.

<https://www.timesnownews.com/health/article/coronavirus-canada-approves-first-clinical-trial-of-potential-covid-19-vaccine/593029>