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# समाचार पत्रों से चयित अंश Newspapers Clippings

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Wed, 28 Dec 2022

### **India, Kazakhstan Hold Joint Military Exercise in Meghalaya**

Exercise KazInd, the sixth version of an annual Exercise between the Indian Army and the Kazakhstan Army, which started on December 15 at the Foreign Training Node in Umroi near Meghalaya's capital city Shillong, successfully ended Wednesday. In a statement, Defence Public Relations Officer (PRO) Lieutenant Colonel M S Rawat said an Indian Army contingent participated with a company-strength from the 6th Battalion of the 11th Gorkha Rifles and the Kazakhstan Army participated with a similar strength. "Both contingents honed their tactical and technical skills in a spectrum of joint counter terrorism operations in jungle and semi-urban or urban terrain. Both sides jointly planned and executed a series of tactical drills to train troops on counter terrorism operations," the statement said.

The 14-day-long joint training exercise culminated with a validation exercise witnessed by the visiting dignitaries. Exercise KazInd 2022 is the 6th edition of the Indo-Kazakhstan Joint exercise and is aimed at building trust and understanding of each other in the field of national security.

The Final Validation Exercise named as Ex Jenis (Ex Victory) displayed various skills inculcated during patrolling, jungle shooting, reflex shooting, change of MRE rations, survival, and combat tracking, multi-modular insertion of troops through air via slithering and low hovering and use of Mine Protective Vehicles, conduct of raids, room-intervention, house-clearing drills and unarmed combat display.

The exercise dealt with practicing intra-operability between both the countries according to the UN Mandate of peacekeeping operations, where likely threats might be encountered through the practiced drills. Senior officials of the Defence Ministry said the exercise would boost defence cooperation between India and Kazakhstan and further bilateral relationships.

Earlier in November, Indian and American forces participated in a 'Yudh Abhyas' or military exercise close to the Line of Actual Control (LAC) on the India-China international border. The exercise was organised at Auli in Uttarakhand. The exercise saw Indian Army soldiers from the Assam Regiment and US Army soldiers from the 2nd Brigade of 11th Airborne Division.

Other military exercises like the ‘Austra Hind’, which was held with participation of Indian Army and Australian Army contingents, was held in Rajasthan – a state which shares its borders with Pakistan on the country’s western border. ‘Exercise Agni Warrior’, which was a joint military exercise between the Indian Army and Singapore Army, was also held in November this year in Maharashtra.

<https://indianexpress.com/article/north-east-india/india-kazakhstan-hold-joint-military-exercise-in-meghalaya-8349309/>



*Wed, 28 Dec 2022*

## **Development of Gas Turbine Engines – the True Test of “Atmanirbharta”: Insighteon Wargame**

Several papers have been submitted to address the issue of indigenisation of aero gas turbine but few necessary steps have been taken in this regard. And it appears that this technological gap is not going to be bridged too soon. A three-day war-game conducted by Delhi based Insighteon Consulting highlighted the inadequacies and challenges in developing gas turbine engines and attempted to ferret out the steps required to bridge the technological gap. If successful, it will be the biggest push to the Atmanirbharta campaign, saving the Ministry of Defence foreign exchange outflow of INR 3 lakh Crores in any block of 20 years. Participating in the war-game were retired DRDO senior scientists, leaders from the public sector like ISRO, HAL, NAL, GTRE, private industry representatives from Godrej Aerospace, Paninian India and Bharat Forge, academia from IISC and IITs, retired defence officers, bureaucrats, diplomats and members of think tanks. The conduct of the war-game followed a “Horizon Scanning” model, forcing the participants to recognise inherent uncertainties and anticipate future opportunities or threats, thereby offer creative solutions to this challenging task at hand.

### **Insighteon Wargame – “The aero engine eco system in India: Identifying and overcoming barriers”**

The small gas turbine engine market in India for next 20 years was estimated to be more than INR 60,000 Crores. There was a unanimous consensus to the fact that by not indigenising aero gas turbine engines, the nation runs a risk of compromising national security. The rising demand and diversity of applications for gas turbine engines due to increasing usage of unmanned aircraft, drones, UCAVs and low-cost cruise missiles, combined with export restrictions placed by foreign governments on engines of UAVs/missiles and components thereof, make future strategic concerns even more dire.

Consolidation of ongoing engine development programs and instituting a National Commission for Aero Engine Development to bring in unification of vision as well as unification of national assets available in the engine development eco system, was the base theme which ran through the conduct of the war-game. It was predicted that co-development models will only end up as licensed production, as they have done in the past, with major work share arriving from overseas. Therefore, it was felt necessary to nurture design talent and go through the learning curves of experience and productivity without shortcuts.



The war-game eroded a common belief that the private sector is capable of providing only engine components to government institutions and foreign OEMs. The confidence exuded by the private sector to take on complete development of smaller gas turbine engines, if given a chance, was encouraging. The analysts recommended that efforts should be made to involve private industries with identified academic institutions, to take up the challenge of developing three to four small engines for identified aerial platforms in a mission mode, through funded programs, which if required could be mentored and managed by technology labs or the user. However, there has to be an institutional mechanism to support this.

The analysts were of the opinion that, keeping the strategic necessity and the lost time in mind, it would be preferable to follow a 2 plus 1 model, where there is concurrent development of smaller engines by one DRDO lab/DPSU and two private sector entities, in order to build in competition and redundancy. It was felt that the government's aim of increasing private sector participation in the defence sector is not presently backed with developmental orders at ground level, as far as gas turbine engines were concerned.

Another recommendation of the analysts was that engine development institutions should increase their interaction with the academia and integrate them as a R&D partner. The SPV model was recommended for development of the 110 kN engine whereas the Kaveri was considered suitable for all platforms from 3 tons to 8 tons like the unmanned fighter aircrafts, the Remotely Piloted Strike Aircraft (RPSA) or the GhatakUCAV.

It was estimated that a delay of approximately six years could be attributed to the absence of HAETF/FTB and other component levels in country test facilities, during the development of the Kaveri engine. Testing overseas is impractical and exposes critical technology to other nations. The analysts were hopeful that in future establishment of in-country engine test facilities will be given the highest priority if aero engines are to be developed in India.

<https://techgraph.co/news/development-of-gas-turbine-engines-the-true-test-of-atmanirbharta-insighteon-wargame/>

# ThePrint

*Thu, 29 Dec 2022*

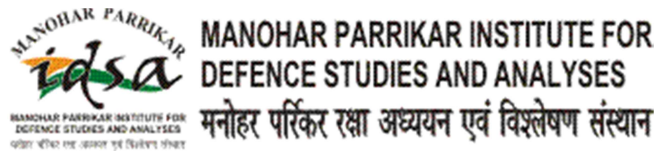
## **Andhra University Giving Graduation Certificates to Defence Personnel on their Experiences without Any Qualification**

Andhra University has given PhD admissions to 38 Air Force, Navy, and Army officers in research areas including strategic studies, military psychology, defence technology, international relations, strategic management. "There was the university's agreement with the defence to offer various courses in Visakhapatnam. We have trained several armed personnel in the last three years. Especially skill bass certificated program during three to six months," Andhra University Vice Chancellor Prasad Reddy said. Reddy said that 27 different MoUs have been signed with the defence sector across the country. "All the ex-servicemen don't have degrees while they were joining the defence sector. Now after their retirement, they need a graduation to do a job. University recognized their experiences and gave certificates without any graduation

qualification. It's already been completed in abroad developed countries. The Andhra university took the decision to recognize the service of defence personnel. Over 3,000 candidates took the certificate from the last three years in the university," he said.

Reddy informed that personnel with the rank of Commodore and above at the university take them under the PhD program under executive quota. "Executive category if they have 15 years of experience, they also have an opportunity if they have experience on the ground. We offer PhD programs in defence technology, PHD strategic management, PHD military psychology," he said. "Soldiers were trained in their respective trades during their service, such as electrical, mechanical, civil, gunner and missile maintainer, but they do not have any formal qualification from any Govt. University/Institute. Hence they are unable to join any company after retirement from army service. This diploma programme from AU will help all ex-servicemen to get suitable jobs," the VC added.

<https://theprint.in/india/andhra-university-giving-graduation-certificates-to-defence-personnel-on-their-experiences-without-any-qualification/1287282/>



*Wed, 28 Dec 2022*

## **European Sky Shield Initiative: Reinforcing Europe's Air Defences**

***IDSa Comment***

***By Swasti Rao***

The Ukraine war has reset Europe's equation with Russia in an irrevocable manner. It has united a seemingly fractured European leadership and provided NATO's waning presence in the region with an unprecedented expansion and capability boost. The European Sky Shield Initiative (ESSI) is the latest military upgrade to come out of NATO's security doctrine. A Letter of Intent (LoI) was signed on 13 October 2022 by Defence Ministers of the 14 NATO countries and Finland (in the process of becoming a NATO member) to boost Europe's short, medium and long-range air defence capabilities. Spearheaded by Germany, the objective of this initiative is to develop a common air and missile defence system to defend NATO and European airspace. Of the 15 signatories, the three Baltic States and Finland share borders with Russia, while Romania, Slovakia, Hungary share a border with Ukraine.

In the backdrop of the ongoing Russia-Ukraine war, this initiative is an attempt by NATO and its allies to bolster NATO's Integrated Air and Missile Defence System (NATO IAMD). NATO IAMD is the defensive component of the alliance's Joint Air Power, which aims to ensure the stability and security of NATO's airspace by coordinating, controlling and exploiting the air domain. It has developed into a highly flexible and highly responsive network of interconnected national and NATO systems comprised of sensor, command and control assets and weapons systems. The new European Sky Shield Initiative adds to the NATO IAMD through a jointly

developed missile defence system which relies on previously developed technology and interoperability between the signatories.

### **The Context**

NATO's Deputy Secretary General Mircea Geoană highlighted threat posed by Russia for regional security, as displayed in the indiscriminate missile attacks on Ukraine. He stated that commitment between the allied countries "is even more crucial" today than ever due to the recent launch of Russian missiles towards Ukraine. Moscow's precision strikes on military and infrastructure facilities across Ukraine that followed the attack on the Crimean Bridge on 8 October 2022 have been particularly unnerving.

A month later, stray missiles fell on Polish territory that were later found to be 'misses' by Ukraine in intercepting Russian air attacks. Such incidents do scratch the vulnerabilities of NATO's air defences. There has been a growing realisation across NATO members to plug the gaps which can lead to a dangerous escalation if left unattended. It must be noted that while more advanced Western air defence missiles are designed to destroy themselves if they miss their target, several of older Soviet missiles do not have such a mechanism. That could be how the stray, Ukraine-launched-but-Russian-made missiles landed on Polish territory killing two people.

### **Germany's Reinvigorated Military Outlook**

The Russian war in Ukraine has brought several overhauls in Germany's military outlook. Spearheading the ESSI is yet another significant milestone. German Chancellor Olaf Scholz first touted the idea of integrating various European systems into a common Europe-wide defence system during a speech at Prague in August this year. He had argued that the EU-27 need to protect themselves with a solution that would guarantee safety against potential attacks from Russia. In fact, Scholz went as far as proposing the idea of a combined European army, a policy earlier advocated by France but Germany was then sceptical of. Scholz pushed the idea for a central military command system with the eventual goal of an EU headquarters. He had also added that it was necessary to build EU's military capabilities in a way that would complement the NATO.

Scholz's announcement for joint military capabilities also comes alongside speeding up deliveries of the IRIS-T air defence systems to Ukraine. It seems that by committing to the development of important yet missing capabilities in NATO through the ESSI, Berlin wants to compensate for its reluctance to send substantial military aid to Ukraine. Germany also wants to strengthen its own air defence capabilities. Bundeswehr currently only has about 12 medium range upgraded Patriot batteries but no other short or long range capabilities.

Germany is of the view that an anti-ballistic missile defence system will be more cost effective when purchased jointly. By listing the IRIS-T SLM short-range air defence system (manufactured by Diehl Defence) as one of the three components of the ESSI, the Scholz government is also aiming to promote the German arms industry. The other two possible components of the ESSI project that have been listed so far are the Israeli-US Arrow-3 exo-atmospheric anti-ballistic missile defence system and the US PATRIOT medium-range system. The focus on US and German made systems seems to be one of the reasons why other leading defence industrial powers in Europe have not joined the programme as yet.

### **Does ESSI reflect a united NATO?**

While the ESSI does reflect a further bolstered NATO's air deterrence and defence to its east, it does not yet show the participation of other NATO members like France, Spain, Poland and Italy. Countries with their own robust air defences that are already inter-operable with that of NATO's existing NATO IAMDs have also steered clear of this project. Spain, for example, already has anti-missile shielding equipment interoperable with NATO's. France's absence despite being a major European power is particularly conspicuous. So is the absence of Poland, a frontline state in the ongoing war in neighbouring Ukraine. One of the reasons why France has not joined the initiative could be as a result of prioritising the interests of French defence industrial complex. In the future, if the listed components of ESSI would aim to include, for example, the French SAMP/T system, Paris might be more inclined to join the initiative. It would provide a boost to France's military industry. Like Germany, France too has been criticised for lagging in sending military support to Ukraine.

Macron's recent announcement that Paris will be sending short range air defences to Kyiv is seen as compensating for the lack of military support so far. Co-incidentally, Macron's announcement came on the same day as NATO announced its ESSI initiative. Both France and Germany have had a traditional policy of engaging Russia. Despite fully supporting the sanctions and EU wide policies towards disengaging from Russia, the two European powers are seen as more mindful of not isolating it totally.

Poland, under the Wisla air defence programme, has already been developing military industrial cooperation with the United States since 2018. Poland's Narew short range air defence programme with UK is underway since 2021. With such multi-billion dollars' worth of joint defence programmes with the US and the UK, there seems to be little appetite in Warsaw right now to join the ESSI.

Cyprus, Ireland and Malta are also not expected to join the integrated air defence as they are not part of NATO. However, close cooperation without formal joining may be expected as momentum picks up. However, some of the participating countries like the Baltic states are developing their own air defence programmes and for them, ESSI could be an opportunity to complement existing capabilities and acquire new ones.

### **Conclusion**

The ESSI, for now, demonstrates a concrete objective for bolstering NATO's air defences in a cost-effective manner. Under German leadership, this initiative will boost a hitherto non-military stature of Germany within the EU. While the ESSI is directly triggered by Russia's war in Ukraine, NATO's insufficient air defences along its eastern front have been a matter of deliberation within the East European members of the alliance. The ESSI may expand later with the inclusion of new members. A modern, inter-operable and coordinated air defence will enhance NATO IAMD's capabilities, provided jointness and coordination are prioritised over other differences of opinion among the prominent European states.

<https://www.idsa.in/idsacomments/European-Sky-Shield>



## **South Korea Unveils First Ever Indo-Pacific Strategy, Terms India as Main Actor**

South Korea has termed India as a main actor in the South Asian Region in its first ever strategy on Indo Pacific. In the report titled “Strategy for A free, Peaceful and Prosperous Indo-Pacific Region” it states that India is a country with high potential, same values. In the Indo-Pacific Policy, South Korea aims to strengthen the Special Strategic Partnership as well as economic ties with New Delhi.

The 24-page report has stated that it plans to increase its engagement with key partners in the region. The report focuses on expanding and strengthening its strategic dialogue and cooperation both within the Indo-Pacific region and also on the global level.

### **India & South Korea**

With India it is keen to increase its strategic communication and cooperation through high-level exchanges both in defence and foreign affairs, as well as strengthening its enhanced economic cooperation by upgrading the ROK-India Comprehensive Economic Partnership Agreement (CEPA). It also talks about building an open and inclusive architecture in South Asia through different substantive cooperation programmes with sub regional multilateral including the Indian Ocean Region Rim association (IORA). South Korea had joined IORA as dialogue partner in 2018 and the SAARC which it joined as observer in 2006.

In Oceania it states that Australia and New Zealand are like minded partners and share interests and values. And towards maintaining and strengthening the rules based international order in the region, South Korea is looking at deepening its ties by identifying new cooperation agenda in areas like defence, critical minerals, security, supply chain and climate change response. And with New Zealand it is looking at expanding cooperation in the economic sphere. In the Pacific Island with whom it shares the Pacific Ocean, according to the report it will support the implementation of the 2050 Strategy for the Blue Pacific Continent, as this is a long term development strategy for the Pacific Island Countries.

### **Africa and Indo-Pacific**

In the new report it has stated that it will host the Korea-Africa Special Summit in 2024 to deepen its ties with countries along the eastern seaboard of Africa and the rest of the African continent. South Korea since 2009 has increased its support for international efforts on counter-terrorism and maritime safety. And as part of these efforts Cheonghae Unit has been deployed to the Gulf of Eden. There are plans to explore more cooperation programmes with the countries on Coastal Eastern Africa in the maritime domain. It states that there are plans to support the partners in the region to achieve the Sustainable Development Goals (SDGs) through development cooperation which are especially tailored and to also increase collaboration on transnational challenges of mutual concern.

Also it plans to further bolster its network with East African countries and others in the Indian Ocean through its dialogue partnership with IORA and new regional organisations like Indian Ocean Commission (IOC).

### **Europe & Latin America**

To realise its vision for a free, peaceful and prosperous Indo-Pacific South Korea plans to further deepen its cooperation with the European Union and its member countries like Germany, France and the United Kingdom. Several countries in Europe have unveiled their own Indo-Pacific strategy. According to the report South Korea is looking for greater linkages and cooperation between the Indo-Pacific and Europe. It states that Latin America is a major partner and it has plans to expand its collaboration with the countries in the region on matters related to economic security and trade as well as global issues on international stage and also to work towards strengthening multilateral cooperation networks with Latin America and Caribbean like Pacific Alliance, Mercosur, SICA and the CARICOM.

India is already holding talks with groupings like Mercosur for expansion of the trade agreement; with SICA and CARICOM it is working towards building deeper cooperation and with Pacific Alliance India already holds observer status.

### **USA & Japan**

South Korea states that it has close cooperation with the USA and Japan – a useful trilateral platform of cooperation and this helps in not only addressing North Korea’s nuclear and missile threats but also supply chain disruptions, emerging regional and global issues as well as cyber security, health crisis and climate change.

The report states that there is a potential for trilateral cooperation with the US and Australia which will help to tackle different challenges in supply chains, emerging technologies, critical minerals and cyber security among others.

<https://www.financialexpress.com/defence/south-korea-unveils-first-ever-indo-pacific-strategy-terms-india-as-main-actor/2929756/>

## **Business Standard**

*Wed, 28 Dec 2022*

### **Global Arms Sales: Change is Underway**

*By Harsh V Pant & Kartik Bommakanti*

The world witnessed a significant surge in arms sales from countries in the Asia-Oceania region in 2021. Despite supply-related disruptions due to the Covid-19 pandemic, arms sales by the 100 most important weapons manufacturing companies stood at \$592 billion, representing an increase of 1.9 per cent from 2020.

According to the Stockholm International Peace Research Institute (SIPRI), in aggregate terms, arms sales from Asia and Oceania increased by 5.8 per cent to \$136 billion, surpassing weapons sales from Europe by a considerable \$13 billion. This represents a significant shift away from a major weapons-producing region, which has historically been dominated by defence-industrial

power centres, especially in the case of Europe but also in North America (which includes the United States and Canada).

While specifically the United States still remains ahead of all the major arms producing countries and regions — notwithstanding a dip of 0.9 per cent in weapons sales from 40 of its top weapons manufacturing companies at \$299 billion in 2021 — the rise in Chinese weapons sales is a portent of things to come. For the year, the People's Republic of China (PRC) alone accounted for a little over 80 per cent of the weapons sales in the Asia-Oceania region, with eight of the PRC's top companies generating combined sales worth \$109 billion, representing an increase of 6.3 per cent compared to 2020. Japan was a distant second with South Korea ranking third and India fourth.

Thus, the prime gainer in this growth of weapons sales in 2021 was the Chinese defence industry. It reflects China's rise as a major weapons exporter that is increasingly playing a role in the global defence market commensurate with the size of its \$17-trillion economy. There are several factors explaining China's performance, but two things stand out: Beijing's commitment to self-reliance in defence technology and the merger of key industries cementing greater consolidation in the Chinese defence industry. Self-reliance has come in the form of sustained Chinese investments since its inception as a Communist State in 1949-50. Today, China is reaping the dividends of those early investments.

The PRC's second crucial achievement has come by way of a combination of factors — technological espionage, deep investments in weapons research and development, and reverse engineering, which has helped it indigenise capabilities in tanks, artillery, weapons, aircraft engines, warships and submarines. That apart, the Chinese defence industry has done so at scale, and is capable of mass producing weapons systems for a range of clients extending from the People's Liberation Army (PLA) and all its service arms to overseas buyers.

According to SIPRI's latest report, Beijing undertook some key changes in its defence industry, notably by merging China Shipbuilding Industry Corporation and China State Shipbuilding Corporation (CSSC) into a single entity, which was a reversal of earlier practices geared towards augmenting productivity and competitiveness. The CSSC was the 14th largest weapons seller in the world with sales touching \$11.1 billion, making it the largest shipbuilder in the world in 2021. However, the SIPRI report did not reveal the breakdown of the PRC's impressive weapons sales to ascertain whether the PLA, PLA Navy and PLA Air Force were the primary buyers of Chinese weapons systems, or whether the bulk of the revenue came from exports. Historically, the Chinese military has been a major investor in the Chinese defence industry and it would be unsurprising if its armed forces was the primary buyer of Chinese weapons for the year. Nevertheless, the PRC is a major exporter of weapons and exports would constitute a sizeable share of the country's weapons sales.

Meanwhile, India too saw improvements in its arms sales in 2021. Two Indian companies, Hindustan Aeronautics Limited (HAL) and Bharat Electronics Limited (BEL) — which ranked 42nd and 63rd, respectively, for arms sales — saw sales surge by 6.7 per cent and 20 per cent, respectively, though in years past, their principal clients have been the Indian armed forces. As in the case of the PRC, the SIPRI data does not provide the precise composition of military sales to specific clients. The Ordnance Factories figured on the list of the top 100 weapons companies in 2020, but have historically lacked vigour in terms of competitiveness and productivity. Their

restructuring in October 2021 into seven smaller companies, however, induced their exclusion from the top 100.

The big test going forward will be whether India can move towards a fully-privatised defence industry, along the lines of the US, or advance towards a defence industrial complex that emulates the PRC. Irrespective of China's growth profile in the world armament industry, the US remains the world's foremost weapons manufacturing and exporting country. Nevertheless, there is no reason for China not to catch up and become an even more consequential competitor to the US. For India, while HAL and BEL made impressive gains in 2021, the government could break up the two state-run monopolies in a quest to boost productivity and competitiveness and then, over time, emulate the Chinese and consolidate them under a single entity.

[https://www.business-standard.com/article/opinion/global-arms-sales-change-is-underway-122122801267\\_1.html](https://www.business-standard.com/article/opinion/global-arms-sales-change-is-underway-122122801267_1.html)

## DefenseNews

*Wed, 28 Dec 2022*

### **Poland Buys Two Spy Satellites from Airbus**

*By Jaroslaw Adamowski*

Poland's Defence Ministry has signed a deal to acquire two observation satellites from French company Airbus. The deal is part of Poland's efforts to boost its military reconnaissance capacities following Russia's invasion of its neighbor Ukraine. Polish Defence Minister Mariusz Błaszczak and French Armed Forces Minister Sébastien Lecornu signed the contract Dec. 27 in Warsaw.

A spokesperson for the Polish ministry told Defense News that the net value of the deal is about €575 million (U.S. \$612 million). "The Polish satellites will be launched into space until 2027," the spokesperson said. "Already in 2023, the Polish Armed Forces will gain access to the resources of the existing Pléiades Neo [Earth observation] satellite constellation."

The two satellites will be delivered to Warsaw along with a receiving station. "The satellites will increase the capabilities of the Polish military in the field of acquiring reconnaissance data based on observation satellites operating as part of the French-Polish constellation," the ministry said in a statement. "Owing to them, it will be possible [for Poland] to obtain reconnaissance data in the field of image reconnaissance with an accuracy of up to 30 cm, and operations within the constellation will allow for imaging a significantly larger area of the Earth than it is possible for a single country."

Błaszczak said other issues he discussed with his French counterpart included areas of defense cooperation that could benefit Ukraine's fight against Russia. Lecornu is scheduled to pay an official visit to Kyiv and meet with Ukrainian Defence Minister Oleksii Reznikov on Dec. 28.

<https://www.defensenews.com/global/europe/2022/12/28/poland-buys-two-spy-satellites-from-airbus/>

## **North Korea's Kim Lays out Key Goals to Boost Military Power**

North Korean leader Kim Jong Un presented unspecified goals to further bolster his military power next year at a meeting of top political officials, state media reported on Wednesday, in an indication he'll continue his provocative run of weapons displays. Kim's statement came as animosities with rival South Korea rose sharply this week as the South accused the North of flying drones across the rivals' border for the first time in five years.

This year, North Korea already performed a record number of missile tests in what experts call an attempt to modernise its arsenal and increase its leverage in future dealings with the United States. During the Tuesday session at the ongoing plenary meeting of the ruling Workers' Party, Kim analysed new security challenges in international politics and on the Korean Peninsula and clarified principles and directions to take in external relations and fights against enemies to protect national interests and sovereignty, according to the official Korean Central News Agency.

Kim set forth new key goals for bolstering up the self-reliant defence capability to be pushed ahead with in 2023 under the multilaterally changing situation, KCNA said, without elaborating. Some observers say the new goals could be related to Kim's push to expand his nuclear arsenal and introduce a spate of high-tech weapons systems such as multi-warhead missiles, a more agile long-range weapon, a spy satellite and advanced drones. They say Kim would eventually aim to use his boosted nuclear capability to force its rivals to accept the North as a legitimate nuclear state, a status he would think is essential in getting international sanctions on his country to be lifted.

On Monday, South Korea's military fired warning shots and launched fighter jets and helicopters, after detecting what it called five North Korean drones that violated the South's airspace. South Korea also flown its own surveillance assets, in a likely reference to unmanned drones, across the border into North Korea in response. South Korea's military said it had failed to shoot down the drones and offered a public apology over causing security concerns.

President Yoon Suk Yeol called for strong air defence and high-tech stealth drones to better monitor North Korea. Some experts say the North Korean drone flights might have been designed to test South Korean and US readiness and neutralise a previous inter-Korean tension-reduction agreement. They say North Korea likely assessed its drones as a cheap yet effective method to cause security jitters and a domestic divide in South Korea.

Yoon, a conservative who took office in May, said Tuesday that South Korea has had little anti-drone training since 2017, a year when his liberal predecessor Moon Jae-in was inaugurated. In an apparent effort to blame the allegedly lax air defence system to Moon's engagement policy toward North Korea, Yoon said that I think our people must have seen well how dangerous a policy relying on the North's good faith and (peace) agreements would be. Moon's liberal opposition Democratic Party accused the president of trying to shift a responsibility for his government's security policy failure to someone else. Under a five-year arms build-up plan



announced on Wednesday, South Korea's Defence Ministry said it'll push to bolster its so-called three-axis system - preemptive strike, missile defence and retaliatory attack capabilities - to cope with North Korean nuclear threats. To do so, it said it'll procure more stealth fighter jets and submarines capable of firing ballistic missiles, operate additional interceptor missiles and radars, and develop more powerful, precision-guided weapons. It said South Korea will also procure diverse types of drones to strengthen its surveillance capacities.

<https://www.theweek.in/news/world/2022/12/28/north-koreas-kim-lays-out-key-goals-to-boost-military-power.html>

## THE ECONOMIC TIMES

*Wed, 28 Dec 2022*

### **Russia and China Hold Naval Drills, Practise Submarine Capture**

Russia and China have completed naval drills in the East China Sea, after a week of joint exercises which included practising how to capture an enemy submarine with depth charges and firing artillery at a warship, Russia's defence ministry said.

The Dec. 21-27 exercises, entitled "Maritime Interaction-2022", included Russia's Pacific Fleet and were carried out in waters off Zhoushan and Taizhou in China's Zhejiang Province, China's official Xinhua news agency said. "Detachments of warships of the Pacific Fleet and the Naval Forces of the People's Liberation Army of China have completed practical tasks within the framework of the bilateral naval exercise," Russia's defence ministry said. "The ships of the two countries, with the support of anti-submarine aviation, jointly searched for a submarine of a conditional enemy and fired a volley of jet depth charges," the ministry said.

The ministry published video showing a group of Russian and Chinese warships in the East China Sea, with Russian sailors speaking in Mandarin to their Chinese counterparts and Russian ships firing missiles.

Once the leader in the global Communist hierarchy, Russia after the 1991 collapse of the Soviet Union is now a junior partner to a resurgent China which already leads in some 21st century technologies. Chinese leader Xi Jinping is due to speak to President Vladimir Putin before the end of the year, TASS news agency said.

<https://economictimes.indiatimes.com/news/defence/russia-and-china-hold-naval-drills-practise-submarine-capture/articleshow/96567033.cms>

## **Ukraine War: Russia Gets Fresh Batch of Su-57 Stealth Fighters; RuAF to Buy a Total of 76 Fifth-Gen Warplanes**

*By Ashish Dangwal*

The Russian Defense Ministry has received a new batch of Su-57 ‘Felon’ fighter jets from the Komsomolsk-on-Amur Aviation Plant (owned by the United Aircraft Corporation). The press service of UAC announced on December 28. In addition to the fifth-generation fighter aircraft, the company also delivered a batch of the Su-35S for the Russian Aerospace Forces. “KnAAZ manufactured and transferred to the Russian Defense Ministry another batch of serial fifth-generation Su-57 aircraft as part of the supply program of this year,” UAC said.

Yuri Slyusar, the corporation’s general director, stated that the aircraft plant had fulfilled the current year’s production schedule for the Su-57 and multipurpose Su-35S fighters for the Russian Aerospace Forces. “We will continue to fulfill our obligations. The aircraft, scheduled for delivery next year, is already in production,” he noted.

The Su-57 started receiving serial deliveries in 2022. By the end of 2024, the Russian defense ministry would acquire 22 fighters; by 2028, their force strength would increase to 76. Meanwhile, Rostec CEO Sergey Chemezov said that the Komsomolsk-on-Amur aviation facility would be modernized to expand the production of fifth-generation Su-57 fighters. The press service said that knAAZ is now undertaking a massive modernization project that will significantly expand the output of these combat vehicles. It is stated that the Far Eastern plant is modernizing production, increasing production capabilities, commissioning new high-tech equipment, involving extra production staff, and establishing a contemporary production line for final assembly. Denis Manturov, Deputy Prime Minister – Minister of Industry and Trade, stated that fifth-generation aircraft mass production could begin on schedule because of system decisions made at the state level to support the company’s modernization. “The expansion of production capacities continues, new high-tech equipment is put into operation, and production personnel is additionally involved. A modern production line of the final assembly is working,” Manturov added.

### **Sukhoi Su-57 Fifth Generation Fighter Aircraft**

The fifth generation Su-57 is developed by Sukhoi Design Bureau and Russian Aircraft Corporation. It is designed to eliminate a range of surface, ground, and air targets. The aircraft has cutting-edge onboard technology, a supersonic cruising speed, intra-fuselage weapons, radio-absorbing coating, and more. Russia’s first stealth-capable fighter plane aims to deliver enhanced capabilities to the country’s armed forces in terms of stealth, speed, missiles, and sensors. The aircraft is outfitted with multi-mission capability, automation, and artificial intelligence technology to dramatically enhance the Russian Air Force’s capabilities.

It will eventually replace the Air Force’s fourth-generation MiG-29 and Su-27 aircraft. Felon has a range of more than 1,500 kilometers, which is more than twice the range of the Su-27 fighter.

Due to enhanced aerodynamics, Sukhoi Su-57 can travel up to Mach 2 without afterburners. It has a range of up to 3,500 kilometers while traveling at subsonic speeds. Russia also aims to deploy the S-70 Okhotnik (Hunter-B) strike drone alongside the Su-57 in a teaming arrangement. The stealth-capable drone will most likely serve as a “loyal wingman” for the Sukhoi Su-57 aircraft. The plane is made of composite materials, which reduce the number of parts and thus the overall weight, enabling mass production. It has a wing body fuselage that combines the functions of a fighter jet and a strike aircraft.

The Sukhoi Su-57, in contrast to the original J-20 aircraft, has 3D thrust vectoring controls that enhance maneuverability at high speeds and altitudes. Besides, it is thought to have superior 3D thrust vectoring control capabilities than the F-22 Raptor.

In close-quarters dogfight situations, the fighter is anticipated to have an advantage because of its excellent maneuverability and supersonic cruise capability. It has two side bays for short-range air-to-air missile storage and two internal armament bays between the engines. Internal weapon carriage reduces drag while allowing the aircraft to maintain a low radar profile. The aircraft’s advanced avionics are coupled with a high degree of controlled automation and smart crew support. The enhanced avionics minimize the pilot’s burden, allowing him to concentrate on tactics and strategies. Furthermore, the fighter can enable the pilot to share data and communicate with ground control systems and air groups in real-time. For enhanced angular coverage, the aircraft incorporates an active electronically scanned array (AESA) radar installed on the nose.

<https://eurasianimes.com/ukraine-war-russia-gets-fresh-batch-of-su-57-stealth-fighters-ruaf/>



*Wed, 28 Dec 2022*

## **Italy Minister Cautious on Supplying Air Defence Systems to Ukraine**

Italy's defence minister struck a cautious tone on whether Italy would be able to supply Ukraine with air defence systems, as requested by President Volodymyr Zelenskiy. The systems would be provided "if possible", Guido Crosetto told Il Messaggero newspaper in an article published on Wednesday. However, "if we give air defence missiles to Ukraine, we must take them from our stocks and we have to do that without depleting them, and being sure about the quality," he added.

Crosetto told Reuters this month that the Franco-Italian SAMP/T air defence system was among the military aid that Kyiv had requested from Rome. His remarks to Il Messaggero follow a Tuesday call between Zelenskiy and Italian Prime Minister Giorgia Meloni, after which Zelenskiy tweeted that Rome was considering supplying air defences. He is pressing Ukraine's Western allies to step up military aid to help counter three months of Russian missile and drone strikes on civilian infrastructure. Under former Prime Minister Mario Draghi, Italy sent five aid packages to Kyiv including military supplies, and Meloni's government is working on a possible sixth delivery. Meloni, who took office in October, has been a firm supporter of Kyiv, despite

friction on the issue within her rightist ruling coalition and a strong pacifist element among domestic public opinion.

<https://www.reuters.com/world/europe/italy-minister-cautious-supplying-air-defence-systems-ukraine-2022-12-28/>

## Business Standard

*Thu, 29 Dec 2022*

### **French Defence Chief Vsists Ukraine, Pledges Army Equipment, \$212 Million**

France's defence minister on Wednesday pledged further military support for Ukraine insisting his government's backing is unflagging while efforts are also being made with Moscow to reach an eventual negotiated end to Russia's invasion. French Minister for the Armed Forces Sebastien Lecornu said his trip to Kyiv was important to identify the priorities of the Ukrainian defence ministry.

France's support will include a 200 million euro (US\$212 million) fund that would allow Ukraine to purchase weapons, Lecornu said. Lecornu travelled to Ukraine's capital after a trip to Poland, where he announced a deal Tuesday to sell Poland two French-made military satellites. While France has been less vocal about its military support for Ukraine than the United States and Britain, the country has sent a steady supply of weapons to Ukraine since Russia invaded on Feb. 24.

France hosted two aid conferences for Ukraine this month. But many in Ukraine remain critical of Paris' response to the war because of President Emmanuel Macron's efforts to maintain contact with Russian President Vladimir Putin and seek a negotiated solution. Lecornu said France was giving military equipment from the French army to the Ukrainian army, but highlighted that this would not weaken France's defence.

France could deliver a new air-defense system in the future, officials said, without revealing details. Reznikov said Ukraine's top priority remains air defense, anti-missile defence, anti-drone defence, that is, the task of protecting (the) Ukrainian sky." French Crotale air-defence systems already are on combat duty, said Reznikov. And accordingly, we agreed that we will increase (the) capabilities of our air force, he said.

Lecornu came to Ukraine a week after Zelenskyy visited the U.S., Ukraine's chief ally, and amid fighting focused mostly in the country's east but with neither Moscow nor Kyiv reporting major gains in recent weeks. In his annual speech to Ukraine's parliament, Zelenskyy urged the European Union to open membership talks with his country after granting it candidate status in June. He also praised relations with the U.S., which has promised to send powerful Patriot air defense systems to Ukraine. This is a special sign of trust in Ukraine, said Zelenskyy.

While both Russia and Ukraine have said they were willing to participate in peace talks, their stated conditions remain far apart. Kremlin spokesman Dmitry Peskov reiterated Wednesday that any peace plan must acknowledge four regions of Ukraine that Russia illegally annexed as Russian territory, a demand that Kyiv flatly rejects.

Russian forces have pressed their offensive to capture all of eastern Ukraine by concentrating in recent weeks on Bakhmut, a city in Donetsk province. Ukrainian forces were pushing a counteroffensive toward Kreminna, a city in neighbouring Luhansk province, in hopes of reclaiming the area and potentially dividing Russia's troops in the east. France has supplied Ukraine with a substantial chunk of its arsenal of Caesar cannons, as well as anti-tank missiles, Crotale air defence missile batteries and rocket launchers. It is also training some 2,000 Ukrainian troops on French soil. Macron pledged last week to provide a new injection of weapons in early 2023. Western military aid to Ukraine has angered Moscow. On Tuesday, Russian Foreign Minister Sergey Lavrov accused Washington and NATO of fuelling the war with the aim of weakening Russia and warned the conflict could spin out of control. Russia invaded Ukraine 10 months ago, alleging a threat to its security orchestrated by NATO.

The war has killed tens of thousands of people and displaced millions so far, with an end nowhere in sight. Russian attacks on power stations and other infrastructure have left millions of Ukrainians without heating and electricity for hours or days at a time. The latest Russian shelling wounded at least eight civilians, including three in Bakhmut, Donetsk regional governor Pavlo Kyrylenko said. In the southern region of Kherson, Russian shelling hit a maternity hospital soon after two women delivered babies there, although Ukrainian officials said no one was wounded.

Zelenskyy's office later reported that shelling of a village in the area wounded three civilians, including a 14-year-old. Ukraine's foreign minister told The Associated Press this week that his government would like to see a peace conference by the end of February. Ukraine has said in the past that it wouldn't negotiate with Russia before the full withdrawal of its troops, while Moscow insists its military gains and the 2014 annexation of the Crimean Peninsula cannot be ignored. Asked about Ukraine's intention to hold a February summit under the U.N.'s aegis, Kremlin spokesman Peskov said any peace plan could only proceed from the assumption of Russia's sovereignty over the illegally annexed areas of Ukraine.

There isn't any peace plan by Ukraine yet, Peskov said during a conference call with reporters. And there can't be any Ukrainian peace plan that fails to take into account today's realities regarding the Russian territory, the incorporation of the new four regions into Russia. Any plan that fails to acknowledge these realities can't be considered a peace plan.

[https://www.business-standard.com/article/international/french-defence-chief-vsists-ukraine-pledges-army-equipment-212-million-122122801297\\_1.html](https://www.business-standard.com/article/international/french-defence-chief-vsists-ukraine-pledges-army-equipment-212-million-122122801297_1.html)



*Thu, 29 Dec 2022*

## **Turkey, Syria, Russia Defence Ministers Meet for First Talks Since 2011**

The defence ministers of Russia, Turkey and Syria met in Moscow on Wednesday, the first such talks since a war broke out in Syria, the Russian defence ministry said. It was also the first meeting between the defence ministers of Turkey and Syria since the start of the war in 2011. Russia and Turkey are both involved in Syria, with Moscow supporting the Damascus regime against its opponents, and Ankara backing rebels. The meeting came as Turkish President Recep



Tayyip Erdogan has repeatedly threatened to launch a military offensive in northern Syria against Kurdish groups.

Russian Defence Minister Sergei Shoigu and his Turkish and Syrian counterparts, Hulusi Akar and Ali Mahmoud Abbas, discussed “ways to resolve the Syrian crisis, the problem of refugees, and joint efforts to combat extremist groups in Syria”, said the Russian defence ministry. It added that the meeting had been “constructive” with a need to “continue it in the interests of further stabilising the situation” in Syria and the region. The Turkish defence ministry struck a similar note, saying the meeting was held in a “constructive atmosphere”. “At the meeting, the Syrian crisis, the refugee problem and joint efforts to combat all terrorist organisations in Syria were discussed,” the ministry said. Syria’s state news agency SANA, quoting the defence ministry, said that the Syrian spy chief was also present and the meeting was “positive.” The report said that the Syrian defence minister and the head of the Syrian intelligence service met with their Turkish counterparts in Moscow, with Russian officials also taking part.

On Saturday, Akar told reporters that Turkey was in talks with Russia about using Syrian airspace in a possible operation against the Syrian Kurdish YPG militia. “We are holding discussions with the Russians about the opening of the airspace” in Syria, he said. The Turkish and Syrian foreign ministers had a brief informal exchange on the sidelines of a regional summit in 2021, and Ankara had acknowledged contacts between intelligence services of the two countries. In November, Erdogan said a meeting with Syrian leader Bashar al-Assad was a possibility, after cutting diplomatic ties with Damascus throughout the 11-year conflict. In mid-December, he indicated that he could meet with Assad after defence and foreign ministers from the two countries had met. “We want to take a step as Syria, Turkey and Russia,” he said at the time.

<https://www.news18.com/news/world/turkey-syria-russia-defence-ministers-meet-for-first-talks-since-2011-6714643.html>

## Science & Technology News



**Press Information Bureau**  
**Government of India**

**Ministry of Science & Technology**

*Wed, 28 Dec 2022*

### **Year-End Review -2022: CSIR (Ministry of Science & Technology)**

#### **PM Chaired the CSIR Society Meeting**

The Prime Minister and President, CSIR, Shri Narendra Modi, chaired the meeting of CSIR Society on 15 October 2022. Union Minister of State (Independent Charge) Science & Technology, Dr Jitendra Singh, who is the Vice President of CSIR and Union Minister of

Commerce & Industry, Shri Piyush Goyal were present in the meeting along with other CSIR Society members who included eminent scientists, industrialists and Secretaries of scientific and other ministries in the government. Secretary, DSIR & DG-CSIR, Dr N Kalaiselvi, made a presentation on the recent achievements and contribution of CSIR. She also presented the road map of CSIR Vision 2030 which is aligned to national ambitions and Vision@2047.

The Prime Minister appreciated the efforts of CSIR in the past 80 years and urged to develop vision for 2042 when CSIR turns 100 years old. He also highlighted the significance of documenting the journey of the past 80 years, which can help take a review of progress achieved and identify areas of lacunae which can be addressed.

### **Inauguration of scaled-up plant for production of Hydrazine Hydrate**

Shri Narendra Modi inaugurated the scaled-up plant for production of Hydrazine Hydrate (HH) developed in collaboration of CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad and Gujarat Alkalies and Chemicals Ltd (GACL), Gujarat on October 10, 2022, as an initiative towards 'Atmanirbhar Bharat'.

The plant developed is based on CSIR-IICT's and GACL's jointly patented technology for production of 10,000 tonnes per year of Hydrazine Hydrate. The collaboration of CSIR-IICT and GACL led the process development from laboratory scale to pilot scale, and then to a commercial scale. The scale up ratio from pilot scale to commercial scale has been up to 100 times.

### **CSIR's participation in Centre–State Science Conclave**

Prime Minister Shri Narendra Modi virtually inaugurated the Centre-State S&T Conclave organized by DST along with Government of Gujarat held at Vigyan Bhavan, Science City, Ahmedabad, on 10th and 11th September 2022. Dr N Kalaiselvi, Secretary, DSIR & DG CSIR and other Secretaries from various departments under the Ministry of S&T presented overview of recent successful projects and ongoing projects conducted in coordination with several states. During the event the success stories of CSIR including Hydrogen Mission, E-mobility, and the development of a diabetic-friendly and bacterial blight-resistant Samba Mahsuri rice crop were mentioned. CSIR participated in the Expo organized during the event which was opened for school, college and university students to expose to ideas for pursuing research and innovation. 13 laboratories of CSIR showcased their technologies along with relevant posters & products.

### **Release of CSIR Guidelines on Disinfection Technologies for Mitigation of SARS-CoV-2 Transmission**

Union Minister of State (Independent Charge) Science & Technology, Dr Jitendra Singh, released the CSIR guidelines on Disinfection Technologies for Mitigation of SARS-CoV-2 Transmission and announced that the UV-C technology developed by CSIR-CSIO is totally effective for mitigation of airborne transmission of SARS-COV-2 and will also remain relevant in post-COVID era. The technology has been successfully tried in Railways, AC Buses and even the Parliament House and is now open for general roll-out for use by common masses. Secretary, Ministry of Housing and Urban Affairs (MoHUA) Shri Manoj Joshi, on the occasion, said that CPWD will work along with CSIR for wider dissemination and adoption of UV-C air duct disinfection system in Government and Private Buildings. A.K Malhotra, Executive Director, Railway Board informed that the UV-C Disinfection Technology has been successfully tested for one month in Railways coaches from Bandra to Chandigarh covering a distance of 1000

kilometres. He said RDSO (Research Designs and Standards Organisation), Lucknow has recommended for the use of this technology in all Railways coaches in a phased manner.

### **MoU signed between AIIMS, Jammu and CSIR-IIIM, Jammu for close scientific collaboration**

An MoU was signed in the presence of Union Minister of State (Independent Charge) S&T, Dr Jitendra Singh, between Director, All India Institute of Medical Sciences (AIIMS), Jammu, Dr Shakti Gupta and Director, CSIR-IIIM, Jammu, Dr. D. Srinivasa Reddy, on behalf of the two institutions on 29th January 2022. In the spirit of intellectual cooperation scholarly exchange, and the development fruitful partnership, CSIR-IIIM, Jammu and AIIMS, Jammu, agrees to collaborate on related matters of mutual interest that may emerge over time. The purpose of the cooperation is to promote collaborative research, development and to facilitate the exchange of ideas, the development of new knowledge, and to enhance high quality research acumen.

### **CSIR NPL celebrated its Platinum Jubilee with the releases a Special Commemorative Postage Stamp**

CSIR-National Physical Laboratory (NPL), New Delhi, which is one of the earliest CSIR laboratories that was set up around the time of independence and its 75th year coincides with the 75th year of India's independence, celebrated its Platinum Jubilee year in the presence of Union Minister of State (I/C) S&T, Dr Jitendra Singh. During the celebrations, Hon'ble Minister released a Special Postage Stamp to mark the occasion. The Minister also dedicated the nation 'LED Photometry Laboratory' at CSIR-NPL to fulfil Hon'ble PM Narendra Modi's vision to develop energy-efficient illumination technology. He also inaugurated Science Exhibition for school students and interacted with them on the demonstrated themes and subjects.

### **CSIR-NIScPR celebrated its 1st Foundation Day after merger**

The inaugural ceremony of the 1st Foundation Day of CSIR-NIScPR (National institute of Science Communication and Policy Research), formed after the merger two CSIR laboratories, National Institute of Science, Technology and Development Studies (NISTADS) and National Institute of Science Communication and Information Resources (NISCAIR), was held on 13 January 2022. Union Minister of State (I/C) S&T, Dr Jitendra Singh after inaugurating the celebration function address the staff of the laboratories and said that there is need to create mass awareness about new Start-up avenues of job and vocation outside the government sector.

### **Announcement of winners of "CSIR Jigyasa Vigyan Mahotsav 2022"**

The CSIR Jigyasa Vigyan Mahotsav 2022, launched on 3rd January 2022, had reached out to more than 20,000 students through Bootcamps across the country, 7 Bootcamps with futuristic themes in areas like Energy, Health, Artificial Intelligence, Climate Change, Water Conservation, Disaster Mitigation and Agro-technology were organised where in science experts could communicate to students some of the contemporary issues which need greater awareness and S&T based solutions. Union Minister, Dr Jitendra Singh announced the winners of the National Level Scientific Creativity Competition "CSIR Jigyasa Vigyan Mahotsav 2022" organized to celebrate India's 75 years of Independence and he also called for searching, mentoring and sustaining Innovation Start-Ups and emphasised on creating a Start-ups ecosystem based on Science and Technology.

Dr Jitendra Singh gave away the Grand Prize of Rs One Lakh each to three students Mohammed Hisam, Shruti Nimbali and Sanchi Bansal for the CSIR's National Level Scientific Creativity

Competition conducted in Hindi and English Medium. 75 winners from all the country were chosen for the awards as part of celebration of India's 75 years of Independence. The children were evaluated rigorously for their creativity; innovative ideas; story telling ability; message conveyed; overall aesthetics; out of box thinking; usability or applicability in case of apps/ videos/ animations.

CSIR labs executed the National level competition and developed strong partnership and engagement with IIT Bombay, My Gov, Kendriya Vidyalays, Navodaya Vidyalays and Atal Innovation Mission, MHRD and others.

### **Inauguration of CSIR-IIIM's BioNEST- Bioincubation Centre in Jammu**

CSIR-IIIM, Jammu's BioNEST- Bioincubator was inaugurated by Union Minister of State (Independent Charge) S&T, Dr Jitendra Singh, on 23 April 2022. The objectives of this incubator is to ignite the entrepreneurship mindset and to nurture start-up culture among youth, local farmers and entrepreneurs of Jammu & Kashmir.

Bio-NEST incubation centre has been financially supported by DBT-BIRAC to foster the biotech innovation ecosystem in the country. Bio-NEST program provides support to establish bio-incubators either as a standalone entity or as a part of academia. 64 Start-Ups have already registered with CSIR-IIIM Jammu and a fresh impetus has been given to promote Start-Up as an alternative source of livelihood, with financial, technical and logistic support being provided by Union Ministry of Science & Technology through its different agencies and departments. Out of the 64 StartUps, 14 have developed products and 4 have already reached the market.

### **Iconic 75 Industry Connect ('i' Connect) inaugurated at CSIR-NEIST, Jorhat**

Union Minister of S&T, Dr Jitendra Singh, inaugurated the event of "Iconic 75 Industry Connect ('i' Connect)" at CSIR-NEIST, Jorhat, Assam. In the inaugural event held on 12 May 2022, Dr Jitendra Singh said, the innovative Start-ups by the young entrepreneurs have to shoulder responsibility for the next 25 years of glorious journey, when we celebrate 100 years of India's Independence as a frontline nation in the world.

The iconic 75 Industry Connect ('i'-connect) events were aimed at forging partnership with industry in 10 thematic /focus areas. The 'i'-connect events were the consolidate efforts of DSIR/CSIR, DBT, DST, MoES and other scientific departments of the Government of India to reach out to industry. Shri Keshab Mahanta, Minister for Health and Family Welfare, Science and Technology and IT, Assam Government and Dr V. K. Saraswat, Member NITI Aayog were other dignitaries present during the inaugural function. On the occasion, Dr Jitendra Singh also released CSIR Compendium of Technologies for Entrepreneurship of Relevance in North East India.

### **Third edition of "TechBharat" inaugurated at CSIR-CFTRI in Mysuru**

The third edition of "TechBharat" on the theme "Transforming India's FoodTech, AgriTech & Agronomic Landscape" was held at CSIR-CFTRI, Mysuru, and was inaugurated by Hon'ble Min S&T, Dr Jitendra Singh on 20 May 2022. Addressing the Conclave-cum-Exhibition on Agri-Tech and Food-Tech at CSIR-CFTRI in Mysuru, Dr Jitendra Singh said, a new wave of Agri-tech Start-ups has come up in India in the last few years due to enabling policy environment provided by Modi government to address the problems of Indian agriculture such as supply chain management, use of outdated equipment, improper infrastructure, and inability of farmers to access a wider range of markets with ease.

Dr. G.R. Chintala, Chairman, National Bank for Agriculture and Rural Development (NABARD), Dr. Sridevi Annapurna Singh; Director, CSIR-CFTRI, Shri Mahesh Shenoy, President, Laghu Udyog Bharati- Mysuru Vibhag, Shri Rajappa, Secretary, Laghu Udyog Bharati- Mysuru Vibhag and many senior officials, delegates and invitees joined the programme at CSIR-CFTRI Campus, Mysuru.

### **CSIR-CLRI celebrated its Platinum Jubilee Celebration**

Union Minister S&T, Dr. Jitendra Singh, inaugurated the Platinum Jubilee celebrations of CSIR-CLRI in Chennai on 19 May 2022. Addressing the Platinum Jubilee celebrations of CSIR-CLRI, Dr Jitendra Singh said, the carbon footprint of leather processing activity needs to approach zero levels and the bio-economy of animal skin-derived products is the new mantra of the time. He said, the carrying capacity requirements of the leather sector in locations like Tamil Nadu demand the implementation of Zero Liquid Discharge as the enforced environmental norm, which is under discussion.

Tracing the evolution of CLRI, Chennai from 1948, Dr Jitendra Singh said, in the first 25 years, the institute may have focused on reaching technologies to the unreached and facilitating the planned development of the sector. During the next 25 years, Indian leather research and industry seem to have focused on modernization and enhancing environmental preparedness. The last 25 years have led to the enhancement of unit value realization from leather in the global market. The new vision for leather research and industry during the next 25 years will be to carve a new niche in world market through innovation and brand building.

### **75th Foundation Day Celebration of CSIR-CECRI**

CSIR-CECRI celebrated its 75th Foundation Day on 25 July, 2022. Dr. N. Kalaiselvi, Director, CSIR-CECRI, in her presidential address, mentioned the coincidence of the 100th Birthday of Prof. John Bannister Goodenough, Nobel Laureate known for his development of lithium-ion batteries. She recalled the remarkable contributions to Electrochemical Science & Technology made by all visionary leaders of CSIR-CECRI starting from Dr. A. Jogarao in 1949 with reverence and the realistic impacts it created in the Industrial & Societal sectors. Padma Vibhushan Dr. R. Chidambaram, DAE-Homi Bhabha Professor in BARC, Former Chairman, Atomic Energy Commission of India and Former Principal Scientific Adviser to the GoI, virtually inaugurated the CECRI@75 Celebrations as the Chief Guest of the Event. Shri. U.K. Bhattacharya, Director (Projects), NTPC, New Delhi and Prof. K.I. Vasu, Former Director, CSIR-CECRI & Founder President, Vijnana Bharati graced the occasion as the Guests of Honour. Dr. K.J. Sreeram, Director, CSIR-CLRI and Dr. N. Anandavalli, Director, CSIR-SERC offered felicitations and called for more combined efforts in common R&D and institutional activities. Subsequently, a demonstration of battery-supercapacitor hybrid e-rickshaw was carried out. As part of the event, the carbon capture demo plant was also inaugurated.

### **HANSA-NG Aircraft of CSIR-NAL successfully completed Engine Relight test in Air**

HANSA-NG, 2 seater flying trainer Aircraft, design & developed by CSIR-NAL, successfully completed in-flight engine relight test at DRDO's Aeronautical Test Range (ATR) facility, Challakere on 17 May, 2022. Flight test was carried out at an altitude of 7000-8000 feet with the speed range of 60 to 70 knots by Wg Cdr K V Prakash and Wg Cdr NDS Reddy, Test Pilots from Aircraft and Systems Testing Establishment (ASTE), Indian Air force (IAF).



In-flight engine relight capability of the aircraft was demonstrated with wind milling propeller and starter assisted start. The aircraft handling characteristics & flight parameters were found to be normal during these test flights. The in-flight engine relight test is most critical and important milestone towards certification of the aircraft by DGCA. The aircraft was ferried to ATR, Challakere on 16 May 2022, after obtaining necessary approvals from DGCA.

### **Inauguration and launch of CSIR "Patch Fill Machine for Pothole Repair & Mobile Cold Mixer cum Paver Machine"**

Programme to dedicate to the public two equipment of CSIR-CRRI, Patch Fill Machine for Pothole Repair & Mobile Cold Mixer cum Paver Machine, for latest value addition in road construction and highways was organized on 9 May 2022 at CSIR-CRRI, New Delhi. Dr Jitendra Singh, Hon'ble Minister of S&T; Shri Nitin Gadkari, Hon'ble Minister of Road Transport & Highways; and General (Dr) Vijay Kumar Singh, Hon'ble Minister of State for Road Transport & Highways and Civil Aviation participated in the formal launching of 'Mobile Cold Mixer Cum Paver' for constructing black top layer using bitumen emulsion and 'Patch Fill Machine' for Pothole repair along the road.

### **Union Minister of S&T, Dr Jitendra Singh unveiled India's first truly indigenously developed Hydrogen Fuel Cell Bus developed by KPIT-CSIR in Pune**

Union Minister of S&T, Dr Jitendra Singh launched India's first truly indigenously developed Hydrogen Fuel Cell Bus developed by KPIT-CSIR in Pune on 21 August 2022. The Hydrogen Fuel Cells utilize Hydrogen and Air to generate electricity to power the bus and the only effluent from the bus is water, therefore making it possibly the most environmentally friendly mode of transportation. Addressing the gathering, Dr Jitendra Singh told that PM Modi's Hydrogen Vision is important for India to ensure Atma Nirbhar means of affordable and accessible clean energy, meeting climate change goals, and creating new entrepreneurs and jobs. He said, Green hydrogen is an excellent clean energy vector that enables deep decarbonization of difficult-to-abate emissions from the refining industry, fertiliser industry, steel industry, cement industry and also from the heavy commercial transportation sector. He lauded the joint development efforts of KPIT and CSIR-NCL and pointed out that the technology prowess of Indian scientists and engineers is no less than the best in the world and also at much lower costs. Dr Jitendra Singh also inaugurated the Bisphenol-A pilot plant in CSIR-NCL.

### **Inauguration of New Institutional Building of CSIR-URDIP located in NCL Campus**

The New Institutional Building of CSIR-URDIP located in CSIR-NCL Campus in Pune was inaugurated by the Union Minister of S&T, Dr Jitendra Singh on 20 August 2022.

As a specialized services unit of CSIR, catering to the niche knowledge-based services sector, CSIR-URDIP is into its 22nd year of existence, dedicated to continuous Analytics and Informatics services activities supporting pre-research and pre-development phases of regular, Mission-mode and Theme-based CSIR R&D projects, besides support services to research institutions, start-ups, SMEs, Indian corporates and also multinational corporations.

The inauguration was marked by a mini exhibition with selected 30 Start-Up founders working on themes of health, energy, environment, digitalization and automation.

### **Cabinet approved widening access of the TKDL database to users, besides patent offices**

The Cabinet chaired by Hon'ble Prime Minister, Shri Narendra Modi approved the Widening access of the Traditional Knowledge Digital Library (TKDL) database to users, besides patent offices on 17 August 2022. The opening up of the TKDL database to users is an ambitious and forward-looking action by the Government of India. This will be a new dawn for Indian traditional knowledge, as the TKDL will drive research & development, and innovation based on India's valued heritage across diverse fields. The opening up of the TKDL is also envisaged to inculcate thought and knowledge leadership through Bharatiya Gnana Parampara, under the New Education Policy 2020.

DG, CSIR, N. Kalaiselvi and Hon'ble Minister of S&T, Dr Jitendra Singh discussed the status of ongoing research projects in cutting edge and futuristic technologies

After taking charge as the newly appointed DG, CSIR, Dr N. Kalaiselvi discussed the status of ongoing research projects in cutting edge and futuristic technologies with Hon'ble Minister of S&T, Dr Jitendra Singh on 08 August 2022.

Dr Jitendra Singh congratulated Dr Kalaiselvi for being the first woman DG of CSIR in its rich history and legacy of over 80 years.

Dr. Kalaiselvi apprised Dr Jitendra Singh about her research experience spanning over two decades in areas like electrochemical power systems, energy storage devices, lithium technologies and electric mobility.

Their discussion focused on emerging innovations in areas like Hydrogen in the energy transition, carbon capture and storage, accessible solar power, plastic recycling and cheap energy storage. Various highlighted recent and novel CSIR technologies were discussed such as CSIR-NAL's High Altitude Performance (HAP) Vehicle and Drone technology; Aroma Mission of CSIR and The Purple Revolution; State-of-the-art Heli-borne survey technology of CSIR for groundwater management on a wider scale with cooperation and coordination from Jal Shakti Ministry fulfilling Hon'ble Prime Minister Narendra Modi's Vision and Mission of "Har Ghar Nal Se Jal".

### **Inauguration of first-of-its-kind Start-ups Expo in Jammu**

Union Minister of S&T, Dr Jitendra Singh inaugurated the first of its kind Start-ups Expo organized in Jammu by CSIR-IIIM on 30 Sept 2022. During the inaugural event the Hon'ble Minister said, the government job mind-set is proving an impediment to Start-Up culture, mainly in North India.

Dr Jitendra Singh gave full credit to the futuristic vision of Prime Minister Narendra Modi who had given a call for "Start-Up India Stand Up India" from the ramparts of Red Fort in his Independence Day address of 2015 that initiated a mass interest, as a result of which the number of Start-Ups in India has increased from mere 350 in 2014 to over 77,000 in 2022 with more than 100 unicorns, while India under Modi has achieved 3rd ranking in the world in the Start-Up ecosystem.

Inaugurating the Expo that covered areas of Agriculture, Aroma, Dairy, Pharma, IT, Computer & Communications, Dr Jitendra Singh said that Start-Up culture is yet to fully catch up the imagination of the youth and entrepreneurs in some of the North Indian States, as comparison to some of the South Indian States, which have taken a magnificent lead, engaging also a chain of globally recognised Start-Ups.

### **CSIR Leadership Meet addressed by Union Minister of S&T, Dr Jitendra Singh**

The first-ever CSIR Leadership Meet was held on 26 Sept 2022 and was attended by the Directors and Head of Departments of all the 37 CSIR labs across the country.

Addressing the Leadership Meet, Dr Jitendra Singh said, the legacy of CSIR is built on the cumulative contribution of its several national laboratories and institutes. He said, each laboratory of CSIR is unique and specialising in as diverse areas as genomics to geology, material technology to microbial technology and food to fuel. He also announced "One Week One Lab" theme-based campaign to showcase the technological breakthroughs and innovations in each of the 37 CSIR laboratories/institutes spread across the country.

DG, CSIR, Dr N. Kalaiselvi addressed the leaders of CSIR and said that 21st century is going to be the century of India and for India and the Science & Technology fraternity must rise to the occasion and work hard to make India a respected name in the global arena.

### **Royal Society of Chemistry (RSC) and CSIR worked together to support Chemistry in schools across India**

The Royal Society of Chemistry and CSIR have partnered to support an outreach programme designed to promote the chemical sciences in schools and universities. The two organizations signed MoU on 22 September 2022, committing to work together on the CSIR's Jigyasa programme. The MoU will be a non-financial one and will be time-bound for at least three years with an option of renewal.

As part of the event, the collaboration organized a Global Experiment including all the CSIR's laboratories. At least 2,000 school children, 150 teachers, and 350 volunteers took part in the 'RSC's Global Coin experiment organised across over 30 CSIR laboratories, in which participants are asked to compare batteries made from different types of coins.

### **Cooperation between the Institut National de la Propriété Industrielle, France and CSIR on access to TKDL**

The Institut National de la Propriété Industrielle (INPI; the National Industrial Property Institute), France, and CSIR entered into a cooperation on the Traditional Knowledge Digital Library (TKDL) access through an Agreement in the gracious presence of Dr. N. Kalaiselvi, DG, CSIR and Secretary, DSIR on 16 Sept 2022. The Agreement was exchanged by Mr. Sebastien Connan, Regional IP Counselor for India and Dr. Viswajanani J Sattigeri, Scientist-H and Head, CSIR-TKDL Unit. The signing of the TKDL Access Agreement with the INPI, France marked the beginning of a new partnership and mutual cooperation in the domains of Intellectual Property Rights as well as traditional knowledge between France and India.

### **73rd Annual Meeting and Symposium of the International Committee for Coal & Organic Petrology (ICCP-2022) held at New Delhi, India.**

The 73rd Annual Meeting and Symposium of the International Committee for Coal and Organic Petrology (ICCP) was organized by CSIR-CIMFR in New Delhi from 18-25 September, 2022. The inauguration was held in the gracious presence of DG, CSIR, Dr N Kalaiselvi. The Commission Meetings and presentations by the technical working groups were held for four days from 19-22 September, 2022, preceding the symposium on 23rd September, 2022. It was represented by globally renowned experts from academics, R&D and industry, presented their

research findings in the respective Council and Commission Meetings. The meeting was followed by two days' technical tour at NTPC Dadri thermal power plant in Uttar Pradesh.

### **CSIR and iCreate signed MoU to harness India's tech strength**

With the objective to foster rapid economic development and help create world-class start-ups, CSIR signed an MoU with the Government of Gujarat's flagship technology incubator - iCreate (International Centre for Entrepreneurship and Technology) on 25 April 2022. The MoU signing was presided over by The Chief Minister of Gujarat, Shri Bhupendra Patel. Under the MoU, CSIR and iCreate intend to establish a collaborative support system for promising tech start-ups by making combined resources available for entrepreneurs and innovators in the country. The partnership will also catalyse scientific innovation and the marketability of high-tech start-ups. Further, iCreate will help set up new incubators at identified CSIR labs. Such start-ups will access CSIR's equipment, facilities, and scientific manpower. CSIR will provide intellectual property support and explore methods of financially supporting innovative start-ups from India to boost emerging entrepreneurs.

### **Golden Peacock Eco-Innovation Award – 2022**

CSIR won 'The golden Peacock Eco-Innovation Award' for the year 2022 for 'Environmental Surveillance for SARS-CoV-2 Virus in Wastewater for Effective Management. The compressive and extensive work done by CSIR labs IICT, CCMB, NCL and NEERI in surveillance during COVID regime was recognized.

### **National Intellectual Property Awards 2021 & 2022**

CSIR bagged the National IP Award for the year 2021 & 2022 under the category "Top R&D institution/organization for Patents Filing, Grant & Commercialization". The award was conferred by Hon'ble Minister of Commerce & Industry Shri Piyush Goyal.

### **Tata Innovista 2022 Award**

Tata Innovista 2022 Award in the category of "Most Innovative Partner" was awarded to CSIR-NML, Jamshedpur as a partner of Tata Steel for the work on "Intelligent Billet Caster: Improve Quality & Productivity.

### **CSIR Directors' Conference at CSIR-IHBT**

CSIR Directors' Conference was held at CSIR-IHBT, Palampur during October 28-29, 2022, chaired by Dr. N. Kalaiselvi, Secretary DSIR and DG CSIR. Directors and Heads of all CSIR laboratories, Units and Directorates of CSIR Headquarters attended the conference and discussed the Vision 2030 & Action Taken Reports of labs.

### **Swachh Sagar Surakshit Sagar Campaign**

The "Swachh Sagar, Surakshit Sagar/Clean Coast Safe Sea" campaign, a 75-day citizen-led campaign for improving ocean health through collective action started on July 5, 2022 with strategic underlying goals that target transformation and environmental conservation through behaviour change. CSIR and its laboratories SERC, CLRI, NIIST, NIO and IICB participated in the campaign and observed coastal clean-up drives at various parts of the country.

### **Steel Slag Road: Steel Slag Valorization Technology for Conversion of Steel Slag as Road Making Aggregates**

INDIA being the world's second largest steel producer also generates around 19 million tons of solid steel slag waste annually. CSIR-CRRI under a major research study sponsored by Ministry of Steel and four major steel industries in India, namely, JSW Steel, AMNS India, TATA Steel and Rashtriya Ispat Nigam Limited has developed the steel slag valorization technology to convert waste steel slag as road making aggregates. Processed steel slag aggregates as developed through waste steel slag has been successfully utilized in the construction of India's First Steel Slag Road at Hazira, Surat. Around one lakh ton processed steel slag aggregates were utilized as 100 % substitute of natural aggregate in steel slag road construction. For its unique design features Steel Slag Road built through CRRI technology has been inducted in INDIA BOOK of Records and ASIA BOOK OF RECORDS as First Steel Slag Road.

Union Minister of Steel, Shri R.C.P Singh inaugurated, Steel slag road at Hazira Surat on 15th June 2022. Technology has been widely appreciated on National and International platforms. An MoU has been signed with different steel industries such as JSW Steel, AMNS India, and Rashtriya Ispat Nigam Limited for Technology Transfer.

### **Indigenous Colorimetric test kits and device for water quality testing**

In Indian scenario, several states have been affected with high level contamination of heavy metals including arsenic, selenium, chromium, cadmium, etc., in water. It is therefore required to have end-to-end detection platform for their detection before water consumption as well as utilization in agriculture in affected regions. The work initiated at CSIR-CSIO integrates successfully accepted colorimetric approach for heavy metals detection in water with mobile phone-based image processing to quantify the contamination level using affordable paper/membrane based disposable sensor strip. The developed mobile app ensures elimination of subjectivity of the colorimetric sensor, which limits their application to true extent by users in resource limited regions especially rural sector.

### **CSIR-NAL's Octa-Copter**

CSIR-NAL has developed a medium-class BVLOS (Beyond Visual Line of Sight) multi-copter UAV. The UAV is made out of a lightweight carbon fiber foldable structure for ease of transportation and has unique features like autonomous guidance through dual redundant MEMS-based digital Autopilot with advanced flight instrumentation systems. DGCA, Ministry of Civil Aviation, Govt. of India has granted conditional permission to CSIR-NAL for conducting BVLOS flight trials. Subsequently, the NAL drone has completed about 50 hrs of flying to verify the performance parameters and the report is being submitted to MoCA for type approval.

NAL's Octa-copter Drone is capable of carrying payload of 20 kg for a duration of 20 minutes. However, for longer duration applications, the payload is reduced suitably. It can fly at an operational altitude of 500 m AGL and a maximum flying speed of 36 kmph. Its regulatory compliance includes DGCA-NPNT, Geo-fencing, and digital sky with 360 degrees Collision avoidance making it one of the best UAVs in its class. The uniqueness of this UAV is its higher payload and higher endurance which is perfect for last-mile delivery, floriculture mapping, geo exploration, precision agriculture pesticide spraying and medical transport at remote places. These drones have been configured to suit multiple applications for societal needs. The three applications envisaged are (a) Emergency Medical/ Vaccine Delivery (b) Agricultural Spraying and (c) for Geophysical Survey applications. Model based design of the autopilot control laws lead to the robust controller has been achieved. This has enabled the Octa-copter to be suited for



these varying applications. Figure show the all three Octa-copters with the three different payloads. The technology has been transferred to 4 MSMEs during the Wings India 2022.

### **mRNA vaccine development platform**

CSIR-CCMB has set-up a working platform to develop mRNA vaccines, starting with identifying a candidate for COVID-19 vaccine. The mRNA vaccines are modular. In principle, the mRNA can be inserted to make a protein of a pathogen of concern in human cells. This can be used to train the recipient's immune system to evade the real pathogen, if it infects.

### **Phenome India - CSIR Health Cohort Knowledgebase (PI-CHeCK)**

CSIR in its constituent laboratories and centres spread all over the country, representing a wide range of ethnicity subclasses, geo-social habitats and occupational exposures, initiated a longitudinal cohort study (Phenome-India Cohort) to estimate the burden of COVID-19 and to assess antibody stability. In a first-of-its-kind study from India, this cohort enabled to ascertain the sero-positivity across the country and identify variable susceptible associations for contacting infection. The longitudinal design enabled to follow up sero-positive individuals and provide insights on the stability of these antibodies.

This multi-centric program involved longitudinal collection and biobanking of biological samples from about 5,000 CSIR employees, pensioners and their family members with concurrent collection of multi-parametric data and included clinical questionnaire, lifestyle and dietary habits, anthropometric parameters, imaging/scanning, biochemical data, and molecular data including genomics, plasma proteomics, and metabolomics. The data, archived in a central data server, was analyzed to develop robust individual and pathway-based observations which then using artificial intelligence-based tools will help to identify risk factors and develop risk matrix for various communicable (COVID-19) and non-communicable (CVD, Diabetes) that will be applicable to the Indian population. When combined with prospective collection of biological samples and analysis of the phenome using big-data approach, it can yield a wealth of information in establishing causation and development of diagnostic and prognostic biomarkers especially for chronic non-communicable metabolic diseases, which is an emerging health crisis in India.

### **AC powered Intelligent, Remote Controlled UVC LED Sterilizer Unit**

An intelligent, ultra-portable, safe UVC LED based disinfection technology was developed by CSIR-CMERI to sterilize electronic gadgets (mobile phones, remotes, power banks etc.) and personal use items like masks, keys, watches, wallets, currency notes, spectacles, jewellery etc. It's a Clean technology based high quality, environment friendly, long life LEDs of short wave length (~275nm) for efficient disinfection with standard UVC dosage with no chemicals, no heat, no ozone involved. The system consists of timer, display, buzzer and LED based functionality indicating end of disinfection cycle or low battery level. It is operated through standard 220V AC power supply. The technology has been transferred to one MSME M/s A.R. Infotech, Madhyamgram, West Bengal.

Virtually flagging off of Steel Slag Aggregates railway rack from Tata Steel, Jamshedpur to Border Road Organization Project Arunank, Itanagar, Arunachal Pradesh

A special consignments of Steel Slag Aggregates was dispatched to Border Roads Organisation (BRO) for construction of roads in Arunachal Pradesh. Union Minister of State (Independent Charge) S&T, Dr Jitendra Singh flagged off of the dispatch of 1600 metric ton of processed Steel

Slag Aggregates railway rack from Tata Steel Jamshedpur to Border Road Organization Project Arunank, Itanagar, Arunachal Pradesh, in a virtual ceremony.

### **Launch of CSIR's new tagline "CSIR-The Innovation Engine of India" and the "One Week, One Lab" countrywide campaign**

Union Minister of State (Independent Charge) S&T, Dr Jitendra Singh addressed the 200th Governing Body Meeting of CSIR in New Delhi; during which Hon'ble Minister launched the new tagline of the organization "CSIR-The Innovation Engine of India".

Union Minister also launched CSIR's "One Week One Lab" theme-based campaign, which is expected to ignite the minds of young innovators, students, academia, and industry to look for opportunities through deep tech Start-ups ventures. Under the campaign each of the 37 laboratories/ institutes of CSIR spread across the country will, one after the other in every successive week, showcase their exclusive innovations and technological breakthroughs to the people of the Nation.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1887009>



*Wed, 28 Dec 2022*

## **IISc Bengaluru to be G20 Science Working Group's Secretariat**

The Indian Institute of Science (IISc) will serve as the secretariat for Science 20 (S20), one of the G20's multiple groupings. The G20 is being presided over by India and the theme of the S20 in 2023 is 'Disruptive Science for Innovative and Sustainable Development'. According to the IISc, discussions will take place throughout the year in various regions of India on this wide issue.

According to a statement from the IISc, the G20 has been working for years to address other global issues as well, such as sustainable development and mitigating climate change. It has established a number of working groups to work toward this goal, including Science 20 or S20.

Three issues will be discussed at the discussions in Agartala, Lakshadweep, and Bhopal: universal holistic health, clean energy for a greener future, and bridging science and society. In addition to the discussions, reportedly there will be an inaugural conference in Puducherry and a summit meeting in Coimbatore. As per IISc, S20 will play a critical role in resolving global concerns like poverty and bringing together G20 member nations' development efforts.

In order to pull millions of people out of poverty and ensure equitable and sustainable development, science must play a significant role in economic progress. Although according to IISc, scientific progress on its own is insufficient, instead cooperation among member countries is necessary for meaningful development so that lessons learned and technological advancements can be exchanged.

The S20 (Science 20) summit, according to IISc, is symbolic of India's efforts to carve a new course for progress. With its rich intellectual history, current scientific and engineering prowess,

and tradition of sustainable innovation, India now has the chance to become a leader in disruptive science for development.

The G20 forum is made up of 19 countries and includes the European Union. It consists of both developed and underdeveloped nations, and its principle objective has been to oversee the management of the world economy. To address various linked global issues, this goal has established a number of working groups, Science 20 or S20 being one of them.

<https://newsonair.com/2022/12/28/g20-india-iisc-bengaluru-to-be-g20-science-working-groups-secretariat/>

**United News of India**  
India's Multi Lingual News Agency

*Wed, 28 Dec 2022*

## **PM Modi to Inaugurate 'Indian Science Congress' on Jan 3**

Prime Minister Narendra Modi will inaugurate the world's largest science meet 'Indian Science Congress'(ISC) in Maharashtra's Nagpur city on January 3, 2023. PM Modi will inaugurate the 108th edition of ISC-2023, based on the theme 'Science and Technology for sustainable Development with Women Empowerment'. RTM Nagpur University gets the second opportunity to host this ISC in 2023.

Dr Subhash Chaudhari, Vice Chancellor of RTM, informed the media that the ISC will be five-day long events and has been divided into 14 sections. Besides the technical deliberations, other major events include Children's Science Congress, Women's Science Congress, Science and Society, Farmers' Science Congress, Tribal Science Congress and Science Exhibitions. Total, 2758 research papers will be presented during the five-day event.

Two Nobel Laureates Ada Yonath from Israel and Sir Fraser Stoddart, a British Chemist have confirmed their presence for this Indian Science Congress. Several other scientists from various parts of the world will participate in the ISC.

Maharashtra Governor and Chancellor of the University Bhagat Singh Koshyari, Union Minister Nitin Gadkari, Union Minister of State for Science and Technology and Earth Sciences Dr Jitendra Singh, Maharashtra Chief Minister Eknath Shinde; Deputy Chief Minister Devendra Fadnavis will be the guests of honour. A special postal stamp to mark the Indian Science Congress and the centenary year of the University will also be released, he added.

<https://www.uniindia.com/pm-modi-to-inaugurate-indian-science-congress-on-jan-3/west/news/2887019.html>

