

Technology Market Scan

INTERNATIONAL

Commercialization of advanced X-ray systems

According to a report, the global X-ray market was valued at ~US\$10.8 Bn in 2018 and is projected to expand at a CAGR of 5.5% from 2019 to 2027. Different types of X-ray devices are available in the market such as stationary/fixed and portable. These diagnostic X-ray devices can be used for various applications, including cardiovascular, respiratory, dental, and mammography.

Rise in prevalence of chronic diseases across the world and rapidly aging global population with augmented healthcare needs boost market growth. North America dominated the global X-ray market in 2018 and the trend is anticipated to continue during the forecast period. High awareness about medical imaging devices, financial capability to purchase expensive machines, rise in demand for technologically advanced & innovative products in hospitals, diagnostic laboratories, and outpatient ambulatory surgery centers; and high infrastructure investment supporting healthcare facilities boost the growth of the market in the region. Asia Pacific is likely to be a highly lucrative market for X-ray during the forecast period.

Recent introduction of advanced, highly portable digital X-ray systems have resulted in an increased demand globally. Moreover, demand for bedside imaging and diagnostics, home healthcare, and minimally invasive solutions is rising across the globe. New X-ray technology produces striking 3D images in full color. Various new and technologically advanced X-ray systems have been introduced by major manufacturers operating in this market.

Based on product type, the global X-ray market has been bifurcated into stationary/fixed and portable. The portable segment has been split into mobile and handheld. The stationary/fixed segment dominated the global X-ray market in 2018. However, the portable segment is expected to expand at the highest CAGR from 2019 to 2027. Advent of wireless and low-power-consuming portable

X-ray technologies, which are leading to innovation and development of advanced portable X-ray, fuels the growth of the global market. In February 2015, GE Measurement and Control launched portable ERESKO 300 MF4-R X-ray tube, which helps in geometric magnification and inspection time reduction in film-based and digital radiography.

In terms of technology, the global X-ray market has been classified into analog and digital. The digital segment has been segregated into computed radiography and direct digital radiography. The digital segment is expected to expand at the highest CAGR during the forecast period. Sensors integrated in digital X-ray systems, especially in systems with direct digital radiology technology, help the system to capture images at a rapid rate of 60 images per hour. Better image quality in less time is a major factor driving the digital X-ray segment.

Based on application, the global X-ray market has been segmented into cardiovascular, respiratory, dental, mammography, and others. The mammography segment is expected to expand at the highest CAGR during the forecast period. According to the World Cancer Research Fund International, there were over 2 million new cases of cancer in 2018. The introduction of new and technologically advanced X-ray systems, rise in awareness about the disease & its diagnosis, and affordability of people fuel the growth of the global market.

<https://www.medgadget.com>

ASIA-PACIFIC

SMEs optimistic in the wake of COVID-19

Small businesses in the Asia-Pacific region are upbeat about their future as they begin to emerge from the economic uncertainty caused by COVID-19. CPA Australia's 12th annual Asia-Pacific small business survey report shows many businesses remain resilient across the region despite the shadow cast by the pandemic over long-term economic recovery. Unsurprisingly, 2020 saw every market surveyed register its lowest recorded

percentage of small business growth, with Australia and Hong Kong recording the worst results. Of the 4,227 small businesses surveyed across 11 markets, a record low of 46.2% of small businesses reported growing during 2020, down from 65.8% in 2019. The challenging environment has also meant 31.3% of businesses shrank last year, more than double the 14.5% result in 2019.

The expectations for 2021 are for a better year for many of the region's small businesses. A total of 60.8% expect to grow this year, with 20.1% expecting to rebound strongly. However, the environment remains uncertain, with 17.1% forecasting they will shrink or close their business. Small business expectations are weakest in Hong Kong. Only 21.2% expect to grow, and 49% expect to shrink or shut down this year.

Businesses also reported higher rate of job losses than in previous years, with 14.7% of small enterprises shedding staff in 2020, compared with 6.7% in 2019. The potential severity of job losses was however partially offset by government wage subsidy schemes, like JobKeeper in Australia. Not surprisingly, small businesses that didn't grow or shrink in 2020 were more likely to reduce employee numbers, with 21.8% cutting staff, compared with only 2.5% of high-growth small businesses. Fortunately, businesses are moderately confident about hiring, with 36.1% of the region's small businesses expecting to add employees this year.

<https://www.intheblack.com>

One-stop SME information portal

The ASEAN Coordinating Committee on Micro, Small, and Medium Enterprises (ACCMSME) launched ASEAN Access, a one-stop business information gateway for international-oriented businesses to expand their market outreach within the ASEAN and beyond. The launch took place in commemoration of the upcoming International MSME Day, celebrated every 27 June annually.

Intra-ASEAN trade accounts for the largest share of ASEAN's trade, reaching 22.5%

of total merchandise in 2019, indicating a high level of inter-dependency among ASEAN Member States. When the COVID-19 pandemic hit, businesses within the region were severely impacted by the drastic reduction in demands for goods and services. However, it was also an opportune moment for accelerating businesses' digital transformation and diversification of sources.

The ASEAN Access is a flagship initiative of the ACCMSME, spearheaded by the OS-MEP, Thailand and supported by the Federal Government of Germany and the German Agency for International Cooperation (GIZ). It contributes to the implementation of the ASEAN Strategic Action Plan for SME Development 2016–2025 which envisions to create globally competitive MSMEs that are seamlessly integrated into the ASEAN community by focusing on initiatives to promote productivity, technology, and innovation; increase access to finance, enhance market access and internationalization; enhance policy and regulatory environment and promote entrepreneurship and human capital development.

<https://www.thailand-business-news.com>

BANGLADESH

Bangladesh SME trade finance network

Blockchain trade finance initiative Contour has launched a domestic network in Bangladesh that will provide digital letters of credit (LCs) to SMEs in the country. Owned by eight shareholder banks—Bangkok Bank, BNP Paribas, Citi, CTBC, HSBC, ING, SEB, and Standard Chartered—Contour delivers a global network for trade finance over distributed ledger, which allow parties to transact and view information electronically.

Contour's central offering is the LC, for which the network has managed to reduce processing time by as much as 90% during testing, from an average of 10 days to under 24 hours end-to-end.

With this new launch, Contour is tackling adoption from the ground up. Through a purpose-built network, Contour will offer

digital LCs to SMEs in Bangladesh for local and international transactions.

<https://www.gtreview.com>

CHINA

Patent law promises new protections for drugmakers

China is changing its patent law with an eye toward ramping up legal protections for drug manufacturers, building on the country's efforts to bolster its intellectual property system. The country is establishing a new system for brand-name manufacturers and generics makers to resolve patent disputes under the changes, which take effect June 1. China also will allow extensions of patent terms for such things as delays at the patent office.

Changes to the litigation system could provide more incentives for large drug companies to enter the Chinese market by boosting procedural protections, attorneys say. Drugmakers have been skeptical in the past about their ability to protect brand-name products against unfair competition in China.

The changes to the system for drug patents are part of a "general trajectory of trying to align Chinese IP laws with international standards," Mark Deming, an intellectual property attorney and shareholder at Polsinelli PC in Chicago, said. China will establish a patent linkage system resembling the framework established by the Hatch-Waxman Act of 1984, which created the modern U.S. regulatory framework. It will provide a process for branded companies to challenge copycat medicines early, which could reshape patent litigation in China. There will also be a platform for registering patent information, similar to the U.S. Orange Book. Additionally, China is raising the amount of statutory damages available in all patent disputes, and will allow courts to award punitive damages of up to five times the amount won at trial for willful infringement. Courts in the U.S. can triple a damages award for willful infringement.

Under the new Chinese system, brand-name drug makers will be able to sue

before a generic launches its product. Companies often have been left playing catch-up after the generic's launch. Even if the branded company wins, attorneys said there can be market impacts and significant price consequences. The new system also provides generics with an opportunity to challenge the validity of drug patents during the approval process. That could take some of the risk out of the equation before a generic goes to market, attorneys said.

<https://news.bloomberglaw.com>

Pre-tax additional deductions for R&D expenses

On April 7, 2021, China's Ministry of Finance (MOF) and State Taxation Administration (STA) jointly released the *Announcement on Further Improving the Policy for Pre-Tax Additional Deductions for R&D Expenses* (MOF STA Announcement [2021] No.13). The announcement, with retrospective effect from January 1, 2021, increases the ratio of additional deduction on manufacturing firms' R&D expenses from 75% to 100%.

According to the announcement, for R&D expenses actually incurred by manufacturing firms:

- If they have not formed intangible assets, nor have they not been included into the current profits and losses, such expenses can be additionally deducted before tax at 100% of the actual deductions.
- If they have formed intangible assets, they can be amortized before tax at 200% of the actual cost of intangible assets.

For example, if an enterprise spent RMB 1 million (approx. US\$153,000) of R&D expenses and such expenses did not form intangible asset and was not included in the current period's profit or loss, a total of RMB 2 million (approx. US\$305,000) is allowed to be deducted from the enterprise' taxable income. If the RMB 1 million expenditure formed intangible assets, the pre-tax amortization can be made based on the costs of RMB 2 million.

As the higher pre-tax deductions mean lower corporate income tax (CIT) to be paid by manufacturing firms, this policy is designed to boost enterprises' R&D input, incentivize business innovation, and advance industrial upgrading.

This policy is expected to reduce corporate taxes by another RMB 80 billion (approx. US\$12 billion) this year, on top of the RMB 360 billion (approx. US\$55 billion) tax cuts last year. In general, enterprises are entitled to enjoy the additional deductions of R&D expenses when completing their annual financial CIT settlement by May 30, the second year. However, under the new policy, manufacturing firms can opt to benefit from the additional deduction of R&D expenses on a semi-annual basis.

The *Announcement [2021] No. 13* stipulates that when an enterprise declares the CIT for the third quarter (pre-paid quarterly) or for the month of September (pre-paid monthly) of the current year, it can choose to deduct the additional deductions of the R&D expenses incurred in the first half of the current year. This reform allows enterprises to benefit from the tax incentive in advance when prepaying the CIT, thereby further encouraging enterprises to increase their R&D spending.

To enjoy this preferential policy, an eligible firm must have manufacturing as their main business and the main business revenue must account for more than 50% of its total revenue. In addition, it must fall under the scope of the manufacturing industry determined by the *Industrial Classification for National Economic Activities (GB/T 4574-2017)* or any updated scope released by the relevant government department.

China has been rolling out tax privileges for R&D activities in manufacturing industry to promote the deep integration of traditional manufacturing and information technology and advance the country's industrial upgrading. In recent years, the ratios of the additional deduction for R&D expenses of manufacturing firms have been raised from 50% and 75% to the current 100%. Besides, the government also introduced a relaxed policy for the refund of end-of-period value-added

tax (VAT) credit for certain advanced manufacturing taxpayers.

<https://www.china-briefing.com>

Commercialization rate of invention patents

According to the 2020 China Patent Investigation Report, the 2020 yearly commercialization rate is 34.7%. The rates throughout the entire 13th Five-Year Plan (2016–2020) sit firmly above 30% while the rates of companies are even higher at above 40%.

The Patent Transfer and Transformation Index reaches 54.7 in 2020, up 3.6 points from 2019. Nearly 80% of companies have clear expectations for the future revenue generated by their patents, 49.5% of which expect that their revenue derived from materializing their patents will increase in the next year; 45.5% expect such revenue to stay flat, and only the remaining 5.0% foresees a decline, suggesting most Chinese corporate patentees see their patent-generating revenue going nowhere but upward.

The Report also illustrates China's enhancement in patent protection. On the one hand, the proportion of Chinese patentees experiencing infringements is dropping, down 3.7% from 2015 to 10.8% in 2020. On the other hand, patentees have a more prepared mind to enforce their rights. In addition, 73.9% of Chinese corporate patentees took measures to protect their rights after being infringed, up 11.1% from 2015, clearly sending a message that right owners are more proactive in defending their belongings.

The Report shows that during the 13th Five-Year period, 7.3% of patent infringement court cases ended up with over 1 million yuan in damages, whether from court order, mediation, or settlement, 4.4% higher than that during the 12th Five-Year period (2011–2015).

The Report also illustrates new changes in innovation activities: patentees themselves tend to invest more in R&D and join hands in innovation. In 2020, 16.5% of China's valid invention patents received R&D investments of more than 1 million

yuan, up 4.4% year-on-year while 43.4% of valid invention patents received R&D investments below 100,000 yuan, down 1.2%, obviously suggesting companies are more generous in infusing more capital to R&D. Nearly 80% of Chinese corporate patentees had worked with others in innovation; 52.1% of corporate patentees had worked with their upstream or downstream customers on innovative projects; 34.9% with companies in the same industry; 27.5% with universities or research institutes, whose most frequent patrons were national-level high-tech companies, reaching 40.5%, 1.9 times more likely than that of non-high-tech enterprises. Cooperation has become a significant option of companies' innovation.

<https://www.mondaq.com>

INDIA

S&T-led SMEs selected for joint R&D and technology transfer

Three Indian S&T-led small-to-medium enterprises/Startups have been selected to undertake joint R&D and technology transfer projects under the India-Russia Joint Technology Assessment and Accelerated Commercialization Program. Two of the selected companies—Prantae Solutions and Jayon Implants are being funded under joint R&D Projects, and the third company, Ananya Technologies, has been funded for technology adoption from Russia.

Prantae Solutions is being funded for the development of a platform for rapid point of care diagnosis of Rheumatoid Arthritis (RA) by a technique called multiplex immunofluorescence analysis based on disposable cartridges. The company aims to create a portable Point-of-Care technology for rapid identification of RA to circumvent the difficulties associated with ELISA-based serological diagnosis.

Support for Jayon Implants will help in the development of prosthetic technologies and manufacturing ceramic endoprotheses for hand and foot joints, adjacent joints, large joints, as well as dental implants. The key aim of the project is to create and commercialize unique, innova-

tive medical devices for patients with RA, degenerative lesions, injury, and arthrosis of the joints of the upper limbs of a person. Ananya Technologies is being funded for joint development of Integrated Standby Instrument System and associated test equipment with their Russian counterpart.

The India-Russia Joint Technology Assessment and Accelerated Commercialization Program is a joint initiative of the Department of Science & Technology (DST), Govt. of India, and the Foundation for Assistance to Small Innovative Enterprises (FASIE). On the Indian side, the Federation of Indian Chambers of Commerce & Industry (FICCI) is implementing this program on behalf of DST.

<https://www.devdiscourse.com>

Guidelines cap expenditure on R&D

The DoT, or Department of Telecommunications, notified the guidelines for the production-linked incentive scheme (PLI) for manufacturing telecom and networking products, has capped the expenditure as investment that global companies can make on research and development (R&D), as well as transferring technology.

Leading global companies and EMS (electronics manufacturing services) players have shown an interest in applying for the much-awaited scheme. The threshold investment is a key element that determines the financial incentive that a company will be eligible for under the scheme. As part of the detailed guidelines, only 15% of the expenditure on R&D and 5% of that incurred in transferring technology will be considered investment for determining eligibility under the scheme.

<https://www.business-standard.com>

JAPAN

Augmented reality collaboration solution

Librestream's Onsight platform enables workforce transformation through industrial use cases like AI Connected Expert, powering the workforce of the future by combining AR, artificial intelligence (AI), and internet of things (IoT) data visual-

ization, enabling automated on-the-job training, reducing cognitive load, and driving operational insights. Since 2019, the Japanese market increasingly adopted Librestream's Onsight platform, with user growth expanding over 300% in that time frame.

As the third-largest economy in the world and fourth-largest in total exports, continuous workforce improvement via technology and innovation is critical to maintaining competitive positioning. The Onsight platform enables efficiency, safety, and resiliency across industries, including those that account for Japan's top exports: cars and vehicle parts (\$136B), integrated circuits (\$30.7B), machinery with individual functions (\$20B), and passenger and cargo ships (\$13.7B).

As a device-agnostic company, Librestream's Onsight platform also supports use on smartphones, tablets, computers, and wearables. In Japan, Onsight use on wearables make up 21% of usage cases, compared to 3.4% across the other 183 countries in which Librestream is deployed. This reflects research findings that the APAC region is expected to outgrow all others in wearable usage through 2025 due to factors including the geography's industrial workforce, embrace of smart technology, and aging populations. Librestream recently announced Onsight Connect for Microsoft's HoloLens 2 advanced AR wearable.

<https://www.prnewswire.com>

MALAYSIA

Accelerating innovation among start-ups

PETROLIAM Nasional Bhd (Petronas) is inviting Malaysian start-ups to participate in the second edition of its technology accelerator programme, Petronas FutureTech 2.0. The programme is aimed at encouraging local innovations and scaling up homegrown technology start-ups to be at par with international standards.

This year, Petronas is teaming up with Telekom Malaysia Bhd (TM) and Sime Darby Plantation Bhd while it continues to partner

global venture capital firm, 500Startups. This collaboration is expected to bring in greater prospects for participating start-ups, as well as to unlock synergies from cross-industry expertise and maximize the programme's value impact on local start-ups.

According to Petronas, the strategic partnership will allow the partnering companies to uncover potentially game-changing technologies and accelerate new ideas that can help transform local industries while enabling the teams to have greater market access for growth. The themes for FutureTech 2.0 are Industrial Revolution 4.0, Specialty Chemicals and Advance Materials, Future of Energy, Digital Transformation and Retail Innovation.

FutureTech 2.0 seeks to build on the success of its inaugural batch 2 years ago, where the programme funded two start-ups from the first cohort—robotics and automation for agriculture technology start-up Braintree Technologies Sdn Bhd and sustainable energy start-up SOLS Energy Sdn Bhd. Shortlisted start-ups in FutureTech 2.0 will undergo an intensive 12-week virtual programme from September, which includes masterclasses, workshops, and coaching from 500 Startups' mentors, as well as C-suite and experts from Petronas, TM, and Sime Darby Plantation.

<https://themalaysianreserve.com>

Innovation exchange programme

The Malaysia Digital Economy Corporation (MDEC) has announced the launch of MDEC Innovation Exchange (MIX), a programme it said is designed to accelerate the digitalization of the nation's economy. In a statement, MDEC said that MIX is part of the agency's corporate innovation efforts aimed at empowering large corporates with value-added digital transformation via local innovations and bringing together established corporates and world-class local technology players.

MDEC said MIX acts as the link between corporates and high caliber local tech start-ups and scale-ups. This enables organizations to realize their asset value, understand their pain points, and

pervasively deploy and utilize digital and data technologies, it claimed.

MDEC will provide the bridge between corporates and startups via the following steps of engagement:

- **Design Thinking:** MDEC will help participating corporates to identify crucial problem statements and pain points within their respective organizations. The agency will then advise the corporates on the right solutions required for their digital transformation;
- **Exploration & Networking:** MDEC will connect the corporates to a pool of over 800 tech startups and scale-ups that can provide solutions or proofs of concept (POCs). The agency will do this by curating a list of relevant solution providers based on the corporate's problem statements;
- **Partnerships & Market Access:** MDEC will co-create programmes with accelerators, venture builders, and VC communities to unearth and highlight the best technology solutions for potential collaborations, including funding, mentorship, business deals, and acquisitions;
- **Empowering Talents:** MDEC will help participating corporates with the hiring of digitally savvy talents through initiatives such as MyDigitalWorkforce Work in Tech (MYWiT) and the Premier Digital Tech Institutions (PDTI). The agency will also assist the corporates in the upskilling of existing staff; and
- **CSR Programmes:** Participating corporates will be able to collaborate with MDEC on programmes and initiatives such as SayaDigital, eBerkat, and the Global Online Workforce (GLOW) to support underprivileged communities in Malaysia.

<https://www.digitalnewsasia.com>

PHILIPPINES

Patent mining to support R&D, tech transfer

The Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development of the Department of Science and Technology (DOST-PCAARRD) has rolled out the patent mining program

for selected commodities to influence changes in research and development (R&D) and technology transfer prioritization in the agriculture, aquatic and natural resources (AANR) sector. The "Patent Mining Program for Selected AANR Commodities through Strengthened IP-TBM Offices" involves 17 participating state universities and colleges (SUCs) and research and development institutes (RDIs). The SUCs and RDIs in the program were previously involved in the two batches of the Intellectual Property and Technology Business Management (IP-TBM) program supported by the DOST-PCAARRD.

The program will discover emerging agricultural technologies and influence the development of priority R&D programs through patent mining. The process highly relies on patent literature, which contains valuable information that can guide organizations in planning for targeted R&D investments and determining early IP management strategies. These tools may help advocate changes in R&D and technology transfer and in crafting new science and technology (S&T) plans for the AANR sector.

To successfully carry out these initiatives, the program will capacitate the project teams through the 1st DOST-PCAARRD Patent Mining Mentorship Series, a series of training activities in partnership with the Intellectual Property Office of the Philippines (IPOP HL). Mentors from IPOP HL will guide the project teams as they proceed with the development of their patent mining reports.

The program will also harness and strengthen the capacities of IP-TBM offices through patent landscaping and mining, discover emerging agri-aqua technological trends and recommend priority R&D programs through patent mining, develop or enhance the IP policies and technology transfer protocols of other SUCs to harmonize IP management and technology transfer activities, and develop a web-based management information system for the real-time monitoring of IP filings of the IP-TBM network.

With the accomplishment of the IP-TBM network in IP management and technology commercialization, this program will also continue such initiatives by targeting the filing of 170 IP applications and

execution of 17 commercialization contracts within the 2-year project duration. Linkages with various agencies will also be enhanced to support activities on IP protection and management, as well as technology transfer and commercialization. The program will also extend its policy development support to PCAARRD's partners in the regional consortia that are not members yet of the IP-TBM network.

<https://businessmirror.com.ph>

Helping small firms apply for international patents

The intellectual property office said it plans to assist small businesses applying for international patents under a partnership with the Philippine Chamber of Commerce and Industry (PCCI). The PCCI and the Intellectual Property Office of the Philippines (IPOP HL) signed a memorandum of agreement Monday to work on training business representatives and promoting the country's intellectual property (IP) assets.

The Madrid system manages trademark registrations worldwide through a streamlined process. Under the agreement, IPOP HL will also help market IP assets from PCCI members and help them commercialize their products. The Philippines' largest business group in turn will promote IPOP HL programs that incentivize small businesses to protect their IP. The two organizations committed to create mentorship opportunities and to showcase incubated technologies in various events.

IP filings rose 21% in the first 4 months of the year to 15,028 as businesses started to recover from the effects of the pandemic. Filings declined by 12% in 2020, with inventors and creatives delaying applications due to subdued business activity during the lockdown declared to contain coronavirus disease 2019 (COVID-19).

<https://www.bworldonline.com>

REPUBLIC OF KOREA

R&D tax breaks to bolster semiconductor industry

The Republic of Korea signaled its intention to heavily boost its semiconductor industry with an announcement on May 13 that it

will offer up to 50% tax credits on research and development (R&D) investment and up to 20% on facilities investments to help private companies there to reach total investment of KRW 510 trillion (USD 452 billion) in memory chips by the year 2030. The R&D incentive marks a 10 percentage point increase from the current maximum 40% credit for R&D investment.

As part of the plan, the Ministry of Trade, Industry and Energy announced other tax breaks, finance, and infrastructure changes to aid chipmakers' competitiveness. Small and medium-sized companies will be eligible to receive up to a 50% R&D credit, but the upper limit for large companies is 40%, according to the plan. The credits can apply from the middle of this year for investments made through 2024. The 10–20% credits for corporate facilities investments is a noteworthy increase, as the maximum credit is currently just 3%.

<https://mnetax.com>

Patents in artificial intelligence

The Republic of Korea ranks fourth in terms of the number of patents registered in the artificial intelligence sector, but an index showing the impact of the patents shows that the quality of patents from South Korea fell relatively short, according to a report. The report from Clarivate Analytics and KAIST Center for Innovation Strategy and Policy says that the number of patents that South Korea registered in the AI field has reached 6,317 between 2010 and 2019, the fourth highest among the 10 countries included in the report. The report analyzed around 147,000 patents registered by 10 countries, including China, the US, Japan, Korea, Germany, Taiwan, the UK, Canada, France, and India.

China was ranked first with 81,236 registered patents, accounting for around 60% of all patents registered by the 10 countries during the period. The US followed China with 24,708 patents, and Japan followed with 6,754 patents. The report, however, noted that the quality of South Korean patents in the AI sector were relatively poor, when compared with those held by the US and Canada.

According to the report's combined patent impact index—an analytic measure that the report used to assess how many useful patents each country holds—Republic of Korea holds around only 8% of the top 10's most useful patents. The CPI index for South Korea is lower than the average of the 10 countries included in the report, 14%. In terms of CPI, the US was ranked first with 43%, followed by Canada with 26%.

<http://www.koreaherald.com>

SINGAPORE

COVID-19 research collaboration

Two COVID-19 research collaboration proposals, initiated by Singapore in 2020, during its chairmanship of COSTI, were officially endorsed at the COSTI-79 and IAMMSTI-11. Both proposals arose from the outcomes of the ASEAN COSTI Forum on COVID-19, initiated and organized by Singapore in October 2020. With the Forum's broad themes of Prevention, Detection, and Therapeutics. Member states shared their collective national experience in dealing with the pandemic and brainstormed ideas for regional cooperation in science and technology which could strengthen ASEAN's technological capabilities against COVID-19.

IAMMSTI-11 and COSTI-79 endorsed a proposal on adding analysis value to genomic surveillance, co-led by Singapore and Malaysia through Singapore's Bioinformatics Institute (BII) and A*STAR Infectious Disease Labs (ID Labs), research institutes under the Agency for Science, Technology and Research (A*STAR), and Malaysia's Institute for Biotechnology (NIBM). The R&D partnership aims to provide accurate and up-to-date genomic information on virus strains detected in the region, leveraging the Global Initiative on Sharing All Influenza Data (GISAI) platform—an international data initiative for sharing of virus genomes, including the coronavirus causing COVID-19, to enable rapid and open access to virus information. This proposed partnership leverages existing biotechnology and bioinformatics capabilities in

ASEAN and builds on top of existing national genome sequencing efforts.

The Philippines and Singapore are co-leading a regional study to assess the levels of immunity within ASEAN communities at different stages, including before vaccination and the longevity of immunity conferred through vaccination. The study will look into the effectiveness of seroconversion of vaccines, which refers to the development of specific antibodies in the blood serum as a result of a COVID-19 infection or vaccination. This research partnership also taps on the networks fostered through the ASEAN Diagnostics (Dx) Initiative, expanding on the list of priority diseases and pivoting to help meet the challenges of the current pandemic.

<https://www.biospectrumasia.com>

THAILAND

Long-term R&D outlook

Thailand's long-term R&D outlook remains positive NXPO pledges confidence with post-Covid measures. The research & development (R&D) investment survey undertaken by the Office of National Higher Education Science Research and Innovation Policy Council (NXPO) and the National Research Council of Thailand (NRCT) in 2019, found that Thailand spent 193,072 million baht on research & development, equivalent to 1.14% of GDP with 5.9% growth year-on-year. Of this, 23% (43,828 million baht) came from the government sector while 77% (149,244 million baht) was spent by the private sector. The top three industries with the most R&D investment were food, petroleum, and finance & insurance. Government spending primarily involved infrastructure and frontier research topics, including quantum technology, space science & technology, high energy physics, and molecular biology. In addition, the survey found that Thailand has 166,788 full-time equivalent personnel on R&D in 2019, equivalent to 25 out of 10,000 people, up 4.6% from the previous year.

<https://www.bangkokpost.com>