

# Technology Market Scan

## ASIA-PACIFIC

### CHINA

#### R&D investment

China's research and development investment increased by 11.6% year on year to 1.97 trillion yuan (US\$ 293.6 billion) in 2018, accounting for 2.18% of the gross domestic product, official data shows. It's the fourth consecutive year that R&D costs in China accounted for over 2% of GDP, according to a research report published by Dalian University of Technology.

China realized 19.59% average annualized growth in R&D investment after the country announced its innovation-driven development strategy, the report said. R&D investment by enterprises increased by 40 times to 1.2 trillion yuan from 1995 to 2016, while government R&D funds rose 12.8 times to about 320 billion yuan.

The research highlighted Huawei as a representative of high R&D investment. In 2016, Huawei spent more than 82 billion yuan in R&D that year, accounting for 7% of all Chinese enterprises' R&D investment, it said. In addition, the China National Petroleum Corporation tops all mainland-listed firm's R&D investment with 17.5 billion yuan, and Alibaba spent the most (17 billion yuan) among overseas listed companies. The research said while the companies are invested heavily in R&D, more efforts may be put on basic research and applied research.

<https://www.asiatimes.com>

#### Amendment to technology transfer regulations

The Chinese government issued the State Council decree No.709, to amend a total of 49 regulations, including the Technology Import and Export Regulations ("TIER") and the Regulations for the Implementation of the Law of the People's Republic of China on Chinese-Foreign Equity Joint Ventures ("JV Regulations"). The amendments will impact particularly those companies who have entered into JV agreements with Chinese companies and/or for whom technology transfer/IP is an important consideration when investing in the

China market.

TIER applies to the transfer of foreign technology into China, among other things, and it includes several mandatory provisions on technology import contracts. Among those, the latest amendment deleted Article 24.32 which mandated the foreign technology transferor to indemnify the Chinese transferee for third party infringement claims. This leaves the general provisions of the Contract Law to govern both technology import and other technology transfers alike, under which the parties are free to negotiate the allocation of infringement liabilities to third parties.

<https://www.networksasiasia.net>

#### Companies investment in R&D

Listed companies in China saw robust growth in research and development (R&D) investment in 2018, according to financial data analyzer Wind. A total of 1,178 listed companies disclosed their 2018 R&D information by Thursday, spending 384.7 billion yuan (about 57.2 billion U.S. dollars) last year, up 23.72 percent year on year.

About 81 percent of the companies invested more in R&D than in 2017, and 85 companies doubled their R&D expenditures. Companies in oil exploration, infrastructure and electronics manufacturing led R&D spending, while investment in emerging industries like computers, semiconductors and biomedicine accounted for a relatively larger proportion of revenue.

Increases in R&D personnel became one of the main drivers for the substantial increase in R&D investment, with the number of R&D professionals in 728 listed companies taking up more than 10 percent of their total employees.

<http://www.xinhuanet.com>

### INDIA

#### Patent applications

India registered the largest innovation jump of any country last year. Patent applications jumped more than 27 percent -- from 1,583 in 2017 up to 2,013. More than half of all international patent applications filed last year came from Asia,

a further sign of innovation shifting "from west to east," the United Nations said Tuesday.

In the latest annual breakdown of patent filings released by the World Intellectual Property Organization (WIPO), the United States remained the leading individual country for applications in 2018. But on a regional basis, Asia's surge continued. "Asia is now the majority filer of international patent applications via WIPO, which is an important milestone for that economically dynamic region and underscores the historical geographical shift of innovative activity from west to east," the agency's director general Francis Gurry said in a statement. WIPO's complex system of registering international patents involves multiple categories.

In the main category — the Patent Cooperation Treaty — the US led the way with 56,142 applications, followed China (53,345) and Japan (49,702). Germany and South Korea came in a distant fourth and fifth, with fewer than 20,000 applications each. India registered the largest innovation jump of any country last year. Patent applications jumped more than 27 per cent — from 1,583 in 2017 up to 2,013.

<https://www.financialexpress.com>

### NEPAL

#### Foreign Investment and Technology Transfer Act

Giving a boost to the aim of the Nepal Investment Summit between March 29-30, 2019, the House of Representatives endorsed the Foreign Investment and Technology Transfer Act (FITTA) on March 18, 2019. The bill was drafted with the objective of attracting Foreign Direct Investment (FDI) to fill up the investment gap and increase home-bound production. Minister for Industry, Commerce and Supplies Matrika Prasad presented the bill in the Lower House. With the endorsement of the bill, the government will now be able to accept or reject FDI within a week, unlike the prior 15-day time period.

As per the FITTA Act, the Investment Board of Nepal (IBN) can approve all projects with investments worth more than NPR 60 million. The act is now open for Department of Industry's (DoI) acceptance and assignment of projects having investment up to NPR 60 million.

<https://www.nepalisansar.com>

### PHILIPPINES

#### Innovation bills

Both houses of the Philippine Congress have approved two bills that seek to promote innovation and provide benefits to start-ups and micro, small and medium enterprises (MSMEs). According to a recent press release, the bicameral conference committees of the Senate and House of Representatives have reconciled the versions of the proposed landmark Philippine Innovation Act and Innovative Startup Act and are now a step closer to becoming laws. Once ratified by both Houses, the twin bills will be sent to Malacañang for the signature of President Duterte.

The Philippine Innovation Act seeks to provide MSMEs greater access to finance, market and technology. Under the bill, a National Innovation Council, to be chaired by the President, will be created to develop the country's innovation goals, priorities, and long-term national strategy. Moreover, the proposed measure provides for a comprehensive support program for MSMEs, from incorporation to internationalisation.

The program shall include coaching and mentoring in the areas of design; technology extension services; standard business practices in contracting, accounting and project management. Other areas also include quality control; standard-setting; business services such as commercialisation and management; and patents; among others. Through a start-up MSME innovation development program, the government shall mobilise its various agencies to work hand in hand with private organisations to provide technical and financial support for the development training of entrepreneurs. Regional innovation that will harness the competitive advantages, as well as exist-

ing and potential strengths of regions and provinces shall also be promoted.

A US\$ 19.12 million (PHP 1 billion) Innovation Fund will be established to strengthen entrepreneurship and enterprises engaged in developing innovative solutions benefitting the poorest of the poor. An Innovation Development Credit and Financing Program shall be developed for MSMEs to avail of loans and other financing activities. All banking institutions shall set aside at least 4% of their total liable funds for innovation development credit.

The Innovative Startup Act, meanwhile, aims to provide start-ups with benefits and incentives which include the following:

1. Subsidy for the application and processing of permits and certificates required for business registration.
2. Expedited or prioritised processing of applications.
3. Subsidy for the use of facilities, office space, equipment, and services provided by government or private institutions.
4. Grants-in-aid for research, development, training and expansion projects.

Furthermore, a Startup Grant Fund and Startup Venture Fund shall be created to provide grants-in aid and to match investments by selected investors in start-ups based in the country. Under the bill, the Department of Education (DepEd), the Commission on Higher Education (CHED), and the Technical Education and Skills Development Authority (TESDA) are directed to develop and integrate, in their respective curricula, entrepreneurial program that shall foster an environment conducive to innovation.

<https://www.opengovasia.com>

### REPUBLIC OF KOREA

#### R&D spending

Leading memory chipmakers spent a record amount of money on research and development last year to hold onto their leading positions and develop emerging technologies, their financial statements showed on April 2.

Samsung Electronics said it invested 18.7 trillion won (\$16.5 billion) in R&D in 2018, up 11 percent from a year earlier. The tech giant's R&D spending was equal to 7.7 percent of its 2018 sales, the highest level since 2003. In its financial report, Samsung highlighted the mass production of cutting-edge universal flash storage for smartphones, DRAM and solid-state drives based on advanced manufacturing procedures as accomplishments of its R&D efforts.

Last year, Samsung said it acquired 2,055 patents in South Korea and 6,062 patents in the United States to protect its intellectual property rights on its semiconductor technologies. SK Hynix said it spent 2.9 trillion won on R&D activities last year, a 16.4 percent rise from a year earlier. The company's R&D expenditure was above 2 trillion won for the third consecutive year. The company said its R&D is focusing on DRAM and NAND solutions as well as new products and emerging technologies to maintain growth momentum and find new business opportunities.

SK hynix's intellectual property rights on its semiconductor technologies numbered 12,786 as of December, its financial statement showed. The tech giants have been jacking up investment to maintain their dominant market position and widen gap with emerging Chinese manufacturers while developing technologies to expand their presence in the nonmemory market amid slumping memory chip prices.

<http://www.theinvestor.co.kr>

#### Patent-driven business model

Samsung Electronics has been pursuing a patent-driven business model, as the firm has gained approval for more than 50,000 patents in the United States where global leading IT firms are competing fiercely, the firm said. "We announced recently that the firm has obtained 128,700 patents around the world as of the end of 2018, which is a 7.9 percent increase year-on-year," a Samsung official said. "By country, Samsung has the largest number of its patents in the U.S. with 50,804, which accounts for 39.5 percent of the total patents."

It is the first time the firm has received more than 50,000 patent grants in the U.S.

since the firm filed its first patent request there in 1984. Samsung said it has focused on receiving more patent grants in the U.S. to be able to respond effectively to possible disputes.

The number of patent grants has been regarded as an index showing how well the company is operating. Samsung has been working around the clock to secure approval of as many patent grants as possible. "Samsung invested 18.7 trillion won (\$16.5 billion) in R&D in 2018 and received 2,055 patent grants in Korea and 6,062 in the U.S.," the firm said. Of the firm's total patents, patents filed in the U.S. account for the largest proportion, followed by Europe with 25,669, Korea with 23,203, China with 11,709 and Japan with 7,170.

Samsung also beefed up its design patents in smartphones and LED TVs, with 517 of the total patent grants the firm received in the U.S. in 2018 being related to product design. The company said it has extended its intellectual property cross-licensing with global IT firms specializing in mobile and memory chip businesses. The firm has agreed terms to extend its cross-licensing agreements with Google in 2014, Western Digital in 2016 and Qualcomm and Nokia in 2018.

Samsung's efforts to intensify its R&D capabilities can be seen in active patent families, referring to the whole set of patents covering the same invention in one or more countries. Samsung has the world's largest number of active patent families with 61,608 in 2018, followed by Japanese electronics firm Canon with 34,905 and IBM with 34,376, according to data by patent research firm IFI.

<https://www.koreatimes.co.kr>

## SINGAPORE

### Boost for digital research, innovation

A national research fund in Singapore will set aside an additional S\$540 million (Bt12.6 billion) for the creation of artificial intelligence (AI) systems to identify patients predisposed to chronic diseases

like diabetes, robots to perform menial tasks and wearable sensors to provide early intervention for heart failure.

The financial boost will also lead to the development of other projects that will deepen the nation's expertise in digital technologies and automation through the fund called the Research, Innovation and Enterprise 2020 Plan. The five-year fund, first announced in 2016, is managed by the National Research Foundation (NRF). With the \$540 million top-up, the \$19 billion fund will now see a total of \$900 million allocated to research and development (R&D) in fields like AI, robotics and supercomputers.

The funding boost was announced at the 11th Research, Innovation and Enterprise Council meeting last week with council members taking stock of the progress on the fund's aim to support R&D in Singapore.

The NRF is supporting a number of projects including Speedcargo, an AI software that takes digital images of cargo packages and plans how the packages should be packed to optimise space. Speedcargo is presently being used at Changi Airfreight Terminal to make air cargo management smarter. The system was created by Singapore-based research organisation TUM-Create. Founded in 2010, it is staffed by researchers from Nanyang Technological University (NTU) and The Technical University of Munich (TUM).

Besides NRF-supported projects, the AI push has seen researchers collaborating on a number of initiatives including one that involves a handheld acoustic sensor which looks like a stethoscope. When placed on a patient's chest and paired with a smartphone app, the device can detect excess fluid in the lungs - a cause of breathlessness. Within 10 seconds, an AI algorithm determines whether the patient's lungs are clear or whether fluid is accumulating inside them.

The prototype has been developed over a decade by a team from NTU and Tan Tock Seng Hospital and has achieved an accuracy rate of more than 92 per cent,

according to Associate Professor Ser Wee of NTU's School of Electrical and Electronic Engineering. This is based on a study of 86 patients from the hospital from 2012 to 2015. The team has filed a patent for the device, which is being developed for the mass market.

<https://www.nationmultimedia.com>

## SRI LANKA

### Reduction in interest rates for SMEs

Prime Minister Ranil Wickremesinghe today announced there will be a 2% reduction in the interest rates granted to Small and Medium-sized Enterprises (SMEs). Following discussions between the Prime Minister and Small and Medium scale entrepreneurs and businessmen, a special committee was appointed to address the prevailing high banking interest rates in the country.

The committee is chaired by a member of the monetary board of the Central Bank, Nihal Fonseka, and comprises of Deputy Governor of the CBSL, H. A. Karunaratne, the President of the Institute of Chartered Accountants of Sri Lanka, Jagath Perera and its Vice President, Manil Jayasinghe. In addition, the Chief Executive Officer of DFCC Bank Lakshman Silva, the CEO of Hatton National Bank, Jonathan Alles and the CFO of Commercial Bank, Nandika Buddhipala are also members of this committee.

Prime Minister Ranil Wickremesinghe noted that the members of the monetary board, bank CEO's, chartered accountants, officers of the ministries of finance, economic affairs and Minister Malik Samarawickrama have held discussions regarding the steps that should be taken to reduce interest rates in Sri Lanka. He noted that the program is prepared to address the issues faced by SME businesses. He went on to note that orders by the monetary board will be issued by next week and they hope to reduce the debt burden to develop businesses.

<https://www.newsfirst.lk>