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Leading the Biotech Sector

KOREA'S PHARMACEUTICALS INDUSTRY



Success Story **Ingrid Drechsel**

President of **Bayer Korea**

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Foreign Direct Investment

ASTRAZENECA TO INVEST USD 630 MLN IN S. KOREA OVER 5 YRS

AstraZeneca PLC, a British-Swedish pharmaceutical company, will invest a total of USD 630 million in South Korea's biotech and healthcare sectors over five years starting next year, betting on the Korean government's big push to nurture the bio and healthcare industries as the country's next growth engines.

The investment plan was announced by Leif Johansson, chairman of AstraZeneca, during a Korea-Sweden business summit organized by Korea International Trade Association (KITA) in Stockholm on June 14. The summit was held on the sidelines of President Moon Jae-in's state visit to Sweden as part of

his Northern Europe trip.

Johansson said during the summit that the biomedicine industry is a key industry for both Korea and Sweden, and the latest investment plan will motivate the two countries to promote joint innovation, enhance industry capacity, and establish an ecosystem that increase consumer accessibility on healthcare.

AstraZeneca's investment will be focused on improving research and development, creating quality jobs, nurturing R&D professionals, and improving access to new drugs for local patients.

S. KOREA'S OVERSEAS DIRECT INVESTMENT HITS RECORD HIGH IN Q1

S. Korea's overseas direct investment hit a record level in the first quarter due mainly to a high base effect, government data showed on June 14.

Investments made by South Korean companies came to USD 14.11 billion in the January-March period, up 44.9 percent from USD 9.74 billion in the same period last year, according to the data compiled by the Ministry of Economy and Finance.

The figure is the highest for any first quarter since 1981, when the government began to release data on investments made by local companies.

"The record investment was driven by a high base effect and a large-scale merger and acquisition in the U.S. by a South Korean firm as well as increased investment in the semiconductor sector in China," said a ministry official handling the issue.

Trade & Commerce

SEOUL, MANILA ANNOUNCE FTA NEGOTIATIONS

South Korea officially announced the start of free trade agreement (FTA) negotiations with the Philippines on June 3 as part of efforts to strengthen economic ties with the Southeast Asian country.

During a meeting here, Trade Minister Yoo Myung-hee and her Philippine counterpart Ramon Lopez set the goal of completing the free trade negotiations by November this year, in tune with South Korea's summit with the Association of South-east Asian Nations (ASEAN) countries.

"By removing tariffs and non-tariff barriers, the

FTA will also further promote the economic cooperation between the two countries," Yoo said.

Trade volume between the two has been expanding sharply over the past years, reaching USD 15.6 billion in 2018, up 67 percent from USD 9.3 billion posted in 2010, according to Seoul's trade ministry.

South Korea already clinched FTAs with Vietnam and Singapore, and is currently FTA talks with Malaysia and Indonesia as well. If all talks under way are successful, South Korea will have FTA deals with all of its top five trading partners in Southeast Asia.

S. KOREA, BRITAIN AGREE ON POST-BREXIT FTA

South Korea and Britain reached an agreement on June 10 to maintain their current free trade agreement even after the "no deal" Brexit, with Seoul becoming a major non-EU member economy to seal such a deal as it braces for the fallout from the divorce.

The move came amid concerns that South Korean companies may no longer enjoy the benefits under the Korea-EU FTA if Britain leaves the world's single largest economic bloc without agreeing on post-Brexit

conditions.

Britain has set Oct. 31 as the new Brexit deadline to allow the country to find the best possible solution, which means the new agreement must be ratified by the date to be immediately implemented in November, Seoul's trade ministry said.

The two countries also vowed to expand cooperation in emerging industrial segments, including energy and artificial-intelligence technology, according to the ministry.

S. KOREA, SWEDEN SIGN MOUS ON TRADE, ECONOMIC COOPERATION

South Korea and Sweden have signed six memorandums of understandings (MOUs) to expand trade and cooperation in emerging industries.

The MOUs were signed in line with President Moon Jae-in's visit to Sweden on the last leg of his eight-day Northern Europe trip that also took him to Finland and Norway.

The agreements include those signed by the Korea International Trade Association (KITA) and the Korea

Trade-Investment Promotion Agency (KOTRA), as well as the signings between research labs to jointly develop new technologies in the fields of carbon convergence and internet-of-things (IoT), the industry ministry said.

"We will actively support the expansion of exchanges between the two countries' companies through the South Korea-Sweden industry cooperation committee, which will be established on the occasion of the president's trip," Industry Minister Sung Yun-mo said.

HEALTH CARE, COSMETICS SECTORS ENJOY SHARP EXPORT SURGE IN 2018

South Korea's health care and cosmetics exports surged to USD 14.6 billion last year, helped by solid demand, the Ministry of Health and Welfare said June 17.

Outbound shipments of drugs, medical equipment and makeup products jumped 19.4 percent from the previous year, with the annual average growth rate for the past five years hitting 21 percent, according to the ministry.

Of the total, cosmetics accounted for USD 6.3 billion followed by drugs and medical equipment at

USD 4.7 billion and USD 3.6 billion, respectively, the latest data showed.

Exports of cosmetics products shot up 26.5 percent compared with 2017, with corresponding numbers for pharmaceuticals and medical equipment rising 14.9 percent and 14.1 percent, respectively.

The ministry attributed the overall gains to "hallyu," or the Korean Wave, centered on K-pop and various other entertainment content and steady growth of local drugmakers on the global stage.

Industry

5G SUBSCRIBERS IN S. KOREA TOP 1 MLN AS COUNTRY EXPANDS COVERAGE

The total number of people who have subscribed to 5G wireless networks in South Korea has topped the 1 million mark as the country steadily expands its coverage infrastructure.

Subscriber numbers reached the milestone on June 10, 69 days after Asia's fourth largest economy became the first country in the world to officially launch 5G commercial services on April 3, according

to the Ministry of Science and ICT.

The new communication system is designed to offer unparalleled wireless connection speeds, low latency and the ability to connect far more devices without the system bogging down.

The increase comes as the number of cellular base stations around the country reached 61,246 early this week, up nearly 7 percent, or 3,980, from May 8.

LG CNS, MICROSOFT TO DEVELOP CLOUD-BASED ENTERPRISE SOLUTION

On June 16, LG CNS Co., LG's IT service subsidiary, said it has agreed with U.S. tech behemoth Microsoft Corp. to collaborate on the development of cloud-based enterprise solutions.

LG CNS and Microsoft signed a memorandum of understanding on strategic partnership at the American company's Asian-Pacific regional headquarters in Singapore, which calls for the integration of their IT and cloud platforms for new enterprise solutions.

The companies plan to form a task force team later

this year to develop groupware solutions based on Microsoft's cloud and Windows 10 and Office 365.

They will first target LG affiliates and other Korean companies and collaborate on marketing in other Asian nations, LG CNS said.

The companies also agreed to develop new technologies and solutions to meet growing demand for digital transformation in various areas, including smart factories and smart cities, the company said.

Government & Policy

CLEAN, FOSSIL-FREE ENERGY PLAN APPROVED

South Korea on June 4 reaffirmed its strong commitment toward reduced dependency on conventional energy sources, such as coal, and more environment-friendly sources.

The country's new energy policy roadmap, proposed in April, was approved at the Cabinet meeting, according to the Ministry of Trade, Industry, and Energy. South Korea's energy guidelines are renewed every five years with a 20-year goal.

The proposal is in line with the Moon Jae-in government's push to phase out coal and nuclear plants

and instead move toward clean and safe energy sources to meet the country's demand for electricity.

"The government plans to gradually decrease the number of nuclear and coal plants to have a clean and safe portfolio of energy," the ministry said in a statement.

Under the proposal, renewable energy sources, such as sunlight and wind, will account for up to 35 percent of the country's electricity output in 2040, sharply up from around 6 percent of the country's energy portfolio in 2017.

S. KOREA KEEPS MEMBERSHIP ON U.N. ECONOMIC-SOCIAL COUNCIL

South Korea has been reelected as a member of a U.N. council in charge of economic and social issues, a position it has held since 2008, the foreign ministry said June 15.

South Korea received membership on the Economic and Social Council (ECOSOC) from 2020 to 2022 in a vote at a U.N. general meeting Friday, the ministry said. It marks the country's eighth successive entry on the 54-member council.

A total of 18 countries were elected to be members for the next three years in the latest election.

The ECOSOC is a U.N. body responsible for overseeing world economic and social issues that range from human rights and development to crimes and drugs.

"We will continue our efforts to contribute to discussions on economic, social and developmental issues of the U.N. and the international community," the ministry said in a release.

Status and Outlook of Korea's Pharmaceutical Industry

Importance of the Pharmaceutical Industry in Korea

The pharmaceutical industry is leading the Biotech (BT) sector, driving economic growth in the 21st century. The size of the global pharmaceutical industry in 2012 was KRW 1,140 trillion, larger than the semiconductor industry (KRW 370 trillion) and the aerospace industry (KRW 648 trillion) combined. In particular, as Korea needs to discover a new growth engine that can drive growth in the decades to come—in addition to previous growth drivers such as the semiconductor, automobile, and shipbuilding industries—the importance of the pharmaceutical industry is only to grow.

Above all, the pharmaceutical industry functions as a social security net, responsible for the health and lives of the people. 80 percent of all pharmaceutical supplies is made by domestic companies, which equates to the protection of people's rights for health and the reduction of social costs. Also, the self-sufficiency rate of vaccines which are vital for health, is as high as 61.1 percent.

In addition, the pharmaceutical industry acts as a growth engine for advanced countries, in that it creates added-value and quality jobs. QuintilesIMS, a global health consultant, forecasts Korea's pharmaceutical industry to grow consistently at 3 to 6 percent by 2021. From the business management side, the industry creates long-term high profits based on patented technologies, keeps the share of youth employment (45.5 percent) high, and its employment growth rate at more than twice that of other manufacturing sectors (employment growth rate of the pharmaceutical manufacturing industry is 3.9 percent, compared to 1.6 percent of the entire manufacturing sector).

Market Size of Korea's Pharmaceutical Industry

The market size of Korea's pharmaceutical industry (including synthesized/bio/botanical, etc. drugs) in 2017 was KRW 22.0632 trillion, accounting for 1.8 percent of the global market. It rose 1.5 percent from the previous year, displaying an annual growth rate of 2.8 percent over the past six years. An annual growth rate of pharmaceutical product exports also has been maintained at 14.5 percent on average. As a result, it has emerged as the promising export industry for the next generation, following in the footsteps of the semiconductor industry.

If only the bio medicine market is considered, it is worth KRW 2.223 trillion, accounting for 10.1 percent of the entire medicine market in Korea. However, the growth rate of the bio medicine market is higher than the entire medicine market. In particular, the export growth rate of the bio medicine market was 35.6 percent over the past five years, while its production growth rate also recorded 8.7 percent, much higher than the annual growth rate of the entire medicine production (5.3 percent).

Table 1 • Size of Korea's Pharmaceutical Market (2012-2017) (unit: KRW B)

	2012	2013	2014	2015	2016	2017	Avg. annual growth rate
Production	157,140	163,761	164,194	169,696	188,061	203,580	5.3%
Export	23,409	23,307	25,442	33,348	36,209	46,025	14.5%
Import	58,535	42,789	54,952	56,006	65,404	63,077	1.5%
Market Size	192,266	193,243	193,704	192,354	217,256	220,632	2.8%

Market Size = Production – Export + Import

Source: Ministry of Food and Drug Safety (MFDS), KPMB

Table 2 • Size of Korea's Bio Medicine Market (2013-2017) (unit: KRW B)

	2013	2014	2015	2016	2017	Avg. annual growth rate
Production	18,654	16,818	17,209	20,079	26,015	8.7%
Export	4,695	6,834	9,391	12,346	15,880	35.6%
Import	8,538	10,173	8,566	10,576	12,095	9.1%
Market Size	22,497	20,157	16,385	18,308	22,230	-0.3%

Market Size = Production – Export + Import

Source: MFDS, KPMB

R&D and Achievements of Korea's Pharmaceutical Industry

The share of R&D investment by Korean pharmaceutical companies appears relatively high in consideration of their revenue. A look into Korea's 43 Innovative Pharmaceutical Companies (selected by the government for its R&D capabilities and potential to go global) in 2018 reveals that they invested KRW 1.4315 trillion, equivalent to 11.8 percent of the total revenue of KRW 12.1033 trillion. Innovative Pharmaceutical Companies also plan to invest KRW 1.7617 trillion in new drug R&D in 2019, 23.1 percent up from the previous year.

Also, with an increasing interest in bio medicine R&D, 40 percent of total drug development expenses went into bio medicine research in 2015.

Korea's technological prowess in the pharmaceutical industry is increasingly being acknowledged in the global market. As global companies have their eyes on the competitiveness of new Korean-made drugs, the amount of technology export contracts has continued to grow every year. The amount of technology exports was merely KRW 620 billion in 2014, but skyrocketed to KRW 5.3706 trillion in 2018, increasing more than 8 times in just five years. This shows that the level of Korea's pharmaceutical technology has garnered the recognition as high added-value.

Besides the technology exports of candidate substances, research

Table 3 • Technology Export by Major Korean Drug Makers (2013-2018)

	2013	2014	2015	2016	2017	2018
Amount of Technology Export (Major drug makers)	460 B (12 cases)	620 B (10 cases)	8,429.8 T (15 cases)	1.99 T (8 cases)	1.4 T (8 cases)	5,370.6 T (12 cases)

Note: amount of technology export = down payment + milestone payment
 Source: MOHW "Achievement of Innovative Pharmaceutical Companies", Press report, etc.

activities to develop new drugs domestically have been underway unceasingly. Since the approval of SK Chemical's Sunpla Injection, a gastric cancer treatment, 29 new drugs have been developed in Korea. Of them, four have turned out to be blockbusters, generating more than KRW 10 billion in revenue. Also, Korea's pharmaceutical companies have about 1,000 new candidate substances, including those in the pipeline for future research. By continuously taking on challenges in R&D, they aim to develop new drugs worth KRW 1 trillion in revenue in Korea by 2025.

The Fourth Industrial Revolution and the Pharmaceutical Industry

The Fourth Industrial Revolution is affecting the Korean pharmaceutical industry greatly. Global pharmaceutical companies are introducing and applying cutting-edge technologies linked with the Fourth Industrial Revolution—i.e., artificial intelligence (AI), Internet of Things (IoT) and Big Data—to reduce the costs and time for new drug development. Against this backdrop, the Korean government and pharmaceutical companies are riding on the wave of the Fourth Industrial Revolution.

The Ministry of Health and Welfare (MOHW) announced in 2018 that it will invest KRW 7.5 billion, jointly with the Ministry of Science and ICT, in establishing an AI-based drug design platform by 2021. Accordingly, they are planning to push for such programs as pilot projects of technology development by Korean drug makers, the collection of information on AI, and the establishment of mid- to long-term plans for AI implementation.

In March 2019, the Korean Pharmaceutical and Bio-Pharma Manufacturers Association (KPBMA) and the Korean Health Industry Development Institute (KHIDI) jointly built a Center for AI-based New Drug Development Facilitation. This center will support pharmaceutical companies develop new drugs using AI. Also, the Center plans to develop an open AI-based platform for new drug development—allowing pharmaceutical companies to safely and quickly develop new drugs—as well as provide consultation and training tailored to foster experts.

In addition, more and more companies are adopting IoT in production facilities. Hanmi Pharmaceutical's Global Smart Factory applies high-tech ICT based on Radio-Frequency Identification (RFID), while Daewoong Pharmaceutical's Osong Smart Factory operates nine kinds of IT systems and around-the-clock automated production lines. As an increasing number of production facilities are adopting cutting-edge technologies, it could become possible to produce quality pharmaceuticals in mass quantities within a short period of time.

Prospects of Korea's Pharmaceutical Industry

As illustrated above, the Korean pharmaceutical industry has produced tangible results, raising hope for high growth going forward.

The Korean government has also displayed strong will to foster the pharmaceutical industry. In its 100 National Initiatives announced in 2017, the pharmaceutical industry was included in a plan to "identify and foster future new industries that create high added-value." Moreover, it announced a strategic investment plan for innovative growth in 2018 that invests KRW 5 trillion in three strategic investment areas and eight leading industries (smart factory, smart farm, fintech, energy new industry, smart city, drone, future vehicle, and bio health). Once again in 2019, the presidential office and the government selected three new key industries to focus its resources on: non-memory semiconductor, next-generation automotive technology and bio. In May this year, the government declared bio-health as a national vision, aiming to capture 6 percent of the global pharmaceutical and medical device market, increase related exports to USD 50 billion, and foster bio-health as one of the nation's five mainstay export industries by 2030. It centers on establishing five major big data platforms to develop new innovative drugs and create an ecology of innovation in which small and mid-sized firms and startups can stand tall as the driving force of the industry.

Domestic pharmaceutical companies are overcoming challenges in the development of new drugs through active and open innovation. Case in point is Yuhan's investment and participation in "Lasertinib" research, a new material for lung cancer, by bio startup Oscotec in 2015, which led to a KRW 1.4 trillion technology transfer to Janssen Biotech in 2018. An open innovation model facilitated through industry-academia-research collaboration, or cooperation between companies has taken root in Korea's new drug R&D. Small-scale Korean pharmaceutical companies are expected to develop into small but strong companies by reducing development risks and overcoming limits.

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** The opinions expressed in this article are the author's own and do not reflect the views of KOTRA.*

Songdo, the World's Leading Bio Pharmaceutical Production City

In Korea, there is a city ranked 1st in the world for biopharmaceutical production capacity. It is Songdo International City. It is part of the Incheon Free Economic Zone (IFEZ)—located in Incheon Metropolitan City—which was given the status as free economic zone for the first time in Korea in 2003. Songdo was designed to foster high tech industries such as IT and bio engineering.

Exemplary companies in Songdo are pharmaceutical companies including Celltrion, Samsung Biologics, Dong-a Socio Group, and Binex. They are engaged in Contract Manufacturing Organization (CMO) of bio pharmaceuticals, or developing and producing biosimilars based on their proprietary technologies. The Janssen Pharmaceutical Company, a subsidiary of Johnson & Johnson, is also located in Songdo. In addition, there are numerous bio processing companies—Ajinomoto Genexine, Charles River Laboratories Korea, Merck, and GE Healthcare—and medical device companies such as Olympus and Osstem Implant. All in all, about 70 companies constitute a bio cluster.

Last year, Saint-Gobain of France, which records annual revenues of EUR 40.8 billion, signed an agreement to purchase a site for a factory. This move was initiated to supply single-use plastic components, required for a bio production process from Korea directly, rather than from overseas, as it used to be. By doing so, the procurement period of raw materials was cut down from four months to one month.

The strength of Songdo lies in its production capacity. The biopharmaceutical production capacity of Songdo is 560,000 liters, well ahead of San Francisco (440,000 liters), Singapore (270,000 liters) and Ireland (230,000 liters). This is attributable to Samsung Biologics, which owns the world's biggest bio pharmaceutical production facility in Songdo, and Celltrion, which has Asia's largest production facility for protein pharmaceuticals produced from animal cell cultures.

The R&D capabilities are also the best in the nation. Incheon Metropolitan City, to which Songdo belongs, records an average R&D spending of KRW 16.9 billion, 11 times more than the national average. Accordingly, Songdo shows the greatest achievements in Korea's bio pharmaceutical R&D. Of Korea's 10 approved biosimilar products, seven are owned by companies headquartered in Songdo. On average, a bio company in Songdo has 52 research personnel and 133 production personnel, topping the national list of human resources engaged in the bio industry. Also, it has well-established infrastructure for transportation of chilled and frozen logistics as it has both an airport and a port in its immediate vicinity. In particular, Incheon International



Airport, which boasts the world's 3rd largest international cargo volume, is within a 20 minutes' distance. As biopharmaceuticals are made from animal cell cultures, it is critical to import and export products before products deteriorate during the storage and transportation process.

Korea's biopharmaceutical exports have increased 20 times as compared to 2010 when exports began in earnest, and Songdo has been playing a driving role. In 2017, exports of the bio industry in Incheon amounted to KRW 1.1903 trillion, accounting for 57.7 percent of total exports.

Celltrion, which succeeded in developing the 2nd generation biosimilar for the first time in the world, recently announced its plan to invest KRW 25 trillion in the biopharmaceutical industry in Songdo, and add a third production site with a 200,000 liter capacity. Meanwhile, Incheon City and Incheon FEZ secured 990,000 sq. meters of a site to create an additional bio cluster. It is expected that the bio cluster in Songdo is likely to double in scale in the coming decade, growing into a global bio valley.

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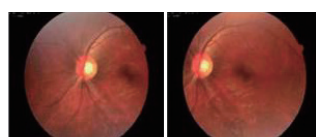
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Invest Korea Market Place

Invest Korea Market Place (IKMP) is an online business matching platform available on Invest KOREA's website with information on over 280 Korean companies seeking to partner with foreign investors. This month, KOTRA Express introduces some outstanding companies in Korea's pharmaceutical sector.

COMPANY A



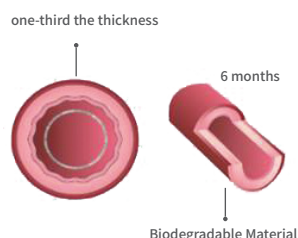
Design of ELI A1 ES and its fundus photos

Investment Requirement		Company Profile	
Amount	USD 1.5 million	Investment Performance	KRW 559 million
Investment Structure	Minority (Financial or strategic investment)	Listed or unlisted	Unlisted

Investment Highlights

Development of Eye-Linked Information (ELI)—an integrated solution for cost-effective fundus examination. Our ELI is a cost-saving solution in terms of price, performance, and portability compared with existing fundus cameras. It can ensure uniform image quality in a short time with the features of a miniaturized design, eyecup design as a darkroom substitute, automatic shot algorithms, AI recognition, tele-screening, and self-interpretation. Thus, our solution can be easily used by non-ophthalmic medical practitioners who lack expertise in interpretation.

COMPANY B



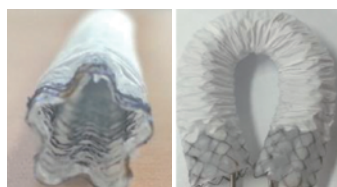
Bioresorbable vascular scaffolds (BRS)

Investment Requirement		Company Profile	
Amount	USD 6 million	Investment Performance	USD 1 million
Investment Structure	Minority (Financial investment)	Listed or unlisted	Unlisted

Investment Highlights

Using bioresorbable materials that contain phosphorylcholine groups accounting for at least 99 percent of the red blood cell membranes on the exterior. Different from hydrophilic polymers, bioresorbable materials with phosphorylcholine groups can eliminate interaction with water and evenly distribute a drug on the surface of a stent, thus ideally releasing it. Our original technology-based coating method inhibits the excessive release of a drug from a region where a stent is implanted so that it acts in the body for longer than the existing polymer coating.

COMPANY C



Flexible stents with an outer flow path

Investment Requirement		Company Profile	
Amount	USD 10 million	Patents and certificates	Local registration of 31 patents, with 28 patents applied abroad
Investment Structure	Minority (Financial investment), JV, M&A	Listed or unlisted	Unlisted

Investment Highlights

EGIS (Biliary Stent): Our technology for mechanical/electro polishing stents features resistance to flexion by removing points of metals that can be easily scratched or broken and minimizes damage caused by movements. Moreover, our products have been registered in 10 countries including China and Russia. We also retain CE certified stents.

SEAL (Bifurcated Stent): Our self-developed stent is the only one in South Korea to be inserted into artificial vessels. The diameter of the introducer is 5mm or below, which minimizes the burden on operators and patients.

For more information, please visit the IKMP page on www.investkorea.org.



Korea's Pharmaceuticals: Leading the Biotech Sector

ONE-ON-ONE WITH INGRID DRECHSEL

KOTRA Express talks to Ingrid Drechsel, President of Bayer Korea, to hear more about Korea's pharmaceutical industry and her experience doing business here.

Headquartered in Germany, Bayer is a global enterprise with its core competencies in the field of life science. The company specializes in healthcare and agriculture with the aim to create value through innovation and growth.

64 years ago in 1955, Bayer expanded to Korea with its crop protection business, playing an important role in supporting the agricultural sector after the war. Bayer Korea grew rapidly right alongside the Korean economy and has been contributing to the development of Korea's pharmaceuticals, animal health, crop protection and other life science based industries. The company currently operates three divisions—Pharmaceuticals, Consumer Health and Crop Science—with approximately 740 employees.

In February 2015, Ingrid U. Drechsel assumed the role of President of Bayer Korea and Country Division Head of Pharmaceuticals. As a biology major, Drechsel started her career in 1981 at a German pharmaceuticals company, and since then, has taken on leadership positions in various global companies prior to joining Bayer, which she has now been with for over 25 years. Her time at Bayer entails experience working in Europe, Russia, the

Middle East, Africa and Asia, and she tells KOTRA Express that when the company asked her if she wanted to work in Korea, she enthusiastically responded, "YES!" Since then, Drechsel says she thoroughly enjoys being here, and adds that she likes Asia because of the special kind of dynamic it has.

Read on to find out more about Ingrid Drechsel's experience doing business here and Korea's pharmaceutical industry.

What are the advantages of doing business in Korea?

As you know, Korea is now a very well-developed country, ranking 12th in terms of GDP, and economic growth over the past few years has been tremendous. Therefore, Korea is a highly attractive country for life science companies like us. For pharmaceuticals in particular, the healthcare system is highly developed. Korea is always involved in clinical trials right from the beginning because they're very important, and the speed and quality are also exceptional. Korea always has an advantage over other places in those respects, and has lots of access to innovative medicines.

What makes Korea's pharmaceutical industry different from that in other parts of the world?

Well, the difference in Korea lies in the pricing system, especially for pharmaceutical products, as they are relatively low. On the other side of that, the salaries of the workforce are on a normal standard in the OECD, and therefore, we always have to see how we can improve profitability. Nevertheless, with innovation, which is well accepted here in Korea, it's always an attractive market.

What kind of product development strategies did Bayer carry out to target Korean customers?

We are very big in the area of blood thinning products dealing with preventing strokes, heart attacks, and etc. which we have a long history of with Aspirin. But nowadays, we are working more with a Factor Xa inhibitor, called Xarelto, which is the first of its kind and has the extensive indications for many patients with leadership not only in Korea, but also globally.

Also, we're increasingly active in the field of ophthalmology, especially for the elderly who are losing focus in their eye-

sight due to age—we want to help them clearly see photos of their grandchildren! We're No. 1 in that market as well.

In women's healthcare, we've been No. 1 since pretty much the beginning. In Korea, specifically, oral contraceptives (OCs) can be purchased over-the-counter at pharmacies, whereas in almost all other countries, you have to go to the gynecologist for a prescription. So, we made a decision to promote our OCs via doctors, because not many women are going to gynecologists and finding out more about the benefits of OCs besides protecting against pregnancy, such as relief from menstrual pain or heavy menstrual flow. This is something very specific to Korea where we're encouraging women to make more visits to their doctors.

I also want to mention the field of oncology. Although we're not No.1 in this area, we are top for liver cancer. I believe oncology patients here in Korea are really benefitting from the innovation that's happening in this field. What I see specifically in Korea is that there is a very high survival rate for patients in comparison to other countries, which is really great for the Korean people. So we're here, supporting and helping out as much as we can in this field.

On that note, what are some trends you are seeing in the Korean pharmaceutical market?

In particular, we're seeing Korean companies taking on the biosimilar approach as well as the development of a vibrant ecosystem for startups, placing the country at the forefront of innovation. We're witnessing the emergence of additional devices to support treatment or the observation of treatment with medical devices. For example, there's a startup called Skylabs that developed a ring-type wearable device—it's much more precise to track the heartbeat through the finger—called "CART" (Cardio Tracker) that can diagnose chronic atrial fibrillation using Internet of Things (IoT) technology. Atrial fibrillation can cause all kinds of cardiovascular diseases.

Skylabs was selected as one of the finalists for our Grants4Apps program,

which we're actually working with KOTRA on, to discover and support digital health technology startups. In 2016 and 2017, one of the four global winners was always a Korean company, so that gives you a look into how vibrant the Korean startup environment is. Skylabs went through an incubation process here in Korea, and later, after being selected as the global winner, they had the chance to be at Bayer's global headquarters in Berlin for three months and work with the most prestigious hospital in Germany called Charite Hospital.

“I think the engagement of the Korean people and their flexibility are incredible—this is what has essentially brought Korea to where it is now, as one of the most advanced economies in the world.”

Can you tell us about some challenges your firm faced while doing business here?

Of course, regulatory environments are different in every country, so there are some challenges in that aspect, but I have to say, we're seeing lots of improvement there.

We're also working closely with the Korea Research based Pharma Industry Association (KRPIA) to expand risk sharing agreements, which enables the financial burden to be shared between the government, company and patient. Currently, such agreements are available for the oncology department and rare diseases, but we are working to expand the scope.

How can Korea become a more ideal business environment for foreign companies like Bayer?

First, I think the engagement of the Korean people and their flexibility are

incredible—this is what has essentially brought Korea to where it is now, as one of the most advanced economies in the world.

Still, I think we will need more versatility and time in fully implementing new policies like the 52-hour work week, for example, so they can be used in a more flexible manner and really take root in the working culture.

What Korean companies or government agencies do you work with to strengthen your business partnerships?

Aside from agencies like KOTRA as well as startups, we also work with contract research organizations (CROs) that conduct clinical trials for us. We have a huge department internally for clinical trials, but we do cooperate with CROs on a regular basis. We also have agreements with companies to promote our brands, and we're always looking forward to what kinds of partnerships the future will bring.

What are Bayer's future plans for doing business in Korea and in Asia?

We've had great business development in both Korea and in Asia in the last few years. Bayer is a really innovative company constantly bringing new brands and new products into the market. I believe this will continue, so our plans will be aligned with the continued growth of pharma as a whole.

We're very much looking forward to increased cooperation with startups, as I mentioned, because I think their ideas can be of benefit for all of us.

We're also in very close communication with universities and institutes on innovation. All in all, I'd say it's a great time to be in Korea and we see a bright future ahead of us!

By Grace Park

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Revive Changwon, the Mecca of Manufacturing

Although it is seen as just one of many metropolitan cities in Korea, Changwon is exceptionally important not just for Gyeongnam Province but for the entire nation, because it has long carried a very special meaning for the Korean economy.

In 2018, Changwon's regional GDP (RGDP) was about 37 percent, with exports making up 47 percent of the entire Gyeongnam Province. But what makes Changwon so special is not only the sheer size of its economy but its industrial structure and composure. Changwon's industrial structure is heavily concentrated with manufacturing, taking up 53 percent of RGDP. Almost all of Changwon's exports are various industrial machines and equipment.

For Korea, Changwon means manufacturing, and the national manufacturing industry means Changwon. This is why Changwon is dubbed the manufacturing capital of Korea. Ever since the inception of the Changwon National Industrial Complex in 1974, which is one of the biggest among 38 of such complexes, Changwon was strategically designed to be the epicenter of Korea's industrial machinery industry, and has been working quite remarkably. Changwon played a crucial role in Korea's economic development by supplying cutting-edge industrial machines and equipment on the one hand, and by earning enormous revenues from its exports of machinery, equipment and automobiles on the other hand.

Since then, Changwon's exports have become increasingly lackluster. Of course, local as well as central government officials are highly concerned about this, trying to find quick and efficient solutions. It seems as though the entire vigor of Korea's economic vitality rests on whether Changwon is able to find the panacea for the current economic situation.

Before finding a cure, the real causes have to be identified. First of all, the exchange rate of the Korean won has been so strong against the main competitor currency, namely the Japanese yen. From 2013 to 2018, the nominal effective exchange rate of the yen depreciated 6.3 percent (from 87.8 to 82.3) while that of the won appreciated 8.8 percent (from 107.0 to 116.4), making the won appreciate 15.1 percent against the yen, according to statistics by the Bank for International Settlements (BIS). This exchange rate movement of the Korean currency against one of its most fierce export competitors, namely the yen, has made Korean exports face difficulty in other areas. Understanding that the correction of the exchange rate policy by any nation has been under tight scrutiny by U.S. authorities as well as international organizations such as



the International Monetary Fund (IMF), the appreciation of the won is not expected to be corrected in the foreseeable future.

The other important cause of the trouble seems to be related with low labor productivity. Both the Organization for Economic Co-operation and Development (OECD) and IMF are unequivocally pinpointing the sub-par labor productivity as the prime challenge for the future. To improve labor productivity, the solution should follow the triple track consisting of human training; the replacement of antiquated factories with high-tech facilities and equipment; and finally, cooperation with advanced corporations abroad. Without providing constant supply of highly skilled and trained labor forces, it is impossible to achieve and sustain

high level productivity. Therefore, all of the education and training institutions and facilities in Changwon have to be overhauled and recharged to fit the needs in creating an upgraded Changwon. Of course, the national government has to allot a substantial size of its budget, maybe up to trillions of won, for that purpose. Also, the government has to take audacious actions in replacing old and rugged machines and plants to dramatically enhance labor productivity. Labor productivity can hardly be raised without machines based on cutting-edge technology. Labor productivity goes hand-in-hand with technology embedded capital. This will probably will require trillions of won, but should not be 100 percent borne by the government. Either financial institutions or crowd funding could take up a substantial portion and share the burden.

While the aforementioned two tracks of requires a significant amount of financial resources, the last track necessitates not tangible funds, but intangible trust. This means the freedom to do business, trust among businessmen, as well as reliability and consistency of the bureaucrats, and all of this could be spelled out in one word: deregulation. In fact, a deregulatory environment is more important and more difficult to obtain than financial resources. Everybody dearly hopes Changwon can grow to become the mecca of the Korean economy once more through deregulation.



By Professor Se Don Shin

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* The opinions expressed in this article are the author's own and do not reflect the views of KOTRA.

Cheong-ju Developing a High-Tech Industrial City



hub along with seven express highways and the Osong KTX Station. Travel time from Cheong-ju to Seoul is about one hour, or two hours to any other location in Korea. Cheong-ju International Airport allows for same day travel to Beijing, Shanghai, Taipei and Osaka. Furthermore, the international ports of Pyeong-taek and Asan are located just 30 minutes away.

Lastly, SK, LG, CJ, and other leading Korean companies are located in Cheong-ju. SK Hynix announced on February 2019 that it will invest KRW 35 trillion in Cheong-ju for new production facilities by 2029. The presence and investment pledges of these global companies affirm Cheong-ju as one of the best places to do business.

We Hope to “Smile Together” with Foreign Investors

There are more than 80 foreign-invested companies in Cheong-ju. Japan's Asahi Glass and Toray; Germany's Avantis; the Netherlands' Goulds Pumps; and the USA's Vogue Warner are the leading companies. We regularly contact business partners in order to gather information on the difficulties faced by foreign-invested companies. Said partners confirmed their satisfaction with the business environment in Cheong-ju.

Mayor Beum-Deuk Han, in cooperation with the City Council and Invest KOREA, is dedicated to making every effort to support foreign-invested companies as well as potential investors.

We hope to “smile together” with all those who choose to do business with us.

Cheong-ju has emerged as the largest city in the central region of Korea with the integration of its neighbor city in 2014, and now has a population of 850,000. Its area is 1.6 times larger than Seoul. According to data released in 2018, Cheong-ju posted a 22 percent average annual growth rate of its gross regional domestic production (GRDP) that spanned five years, from 2010 to 2015. It was ranked first among 228 local government municipalities in Korea. The nation's No. 1 GRDP growth rate is objectively proving a favorable business environment.

Why Cheong-ju is Great for Business

First, Cheong-ju's manufacturing industry accounts for 48 percent of the total industry. The majority of companies are technology-intensive ones in the fields of biology, semiconductors, precision instruments, chemical products, parts and components. Osong, located in the western part of Cheong-ju, has been developing into a global bio-hub like the U.S. city of Boston. It contains the Ministry of Food and Drug Safety and other government organizations related to the bio sector. In addition, there are 120 research institutes

which include three universities. More than 100 companies such as Celltrion and Yuhan-Kimberly Clark are producing their goods there. All processes from R&D to production are consistently and effectively being carried out.

Second of all, Cheong-ju boasts a high quality workforce. About 12,000 students graduate from nine different universities every year. Moreover, the average annual labor cost of workers is USD 35,000, 8 percent lower than the national average of USD 38,000. Also, Cheong-ju's per capita labor productivity was USD 50,200, 10 percent higher than the national average of USD 45,600.

Thirdly, it boasts competitive prices for factory sites. The average cost of an industrial complex here is around USD 300 per sq. meter compared with USD 400 in a nearby region, and USD 700 in the metropolitan area. There are 11 industrial parks in Cheong-ju. As availability is low in most of them, four more industrial complexes are currently under construction. Among them, the ideally located Ochang Technopolis, which is scheduled for completion in 2022, was partly designated as a foreign investment zone.

Fourth, it is located in the center of Korea and recognized as a transportation

By KwangHee Kim

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In 2017, the American Music Awards were held in Los Angeles. Pop sensation BTS became the first Korean pop group to perform at the awards ceremony, which, along with the Grammys, is considered as one of the biggest music awards shows in the U.S. The seven-member group BTS gave a great live performance, featuring songs off its new single “DNA,” and the audience loved it. Since then, BTS has broken record after record, becoming the first group since the Beatles to send three albums to the number one spot in America in less than a year. In April 2019, K-pop phenomenon BLACKPINK made their U.S. festival debut, making history as the first K-pop girl group ever to perform at Coachella. Previously regarded as part of a distant land far away, Korean pop music has now gained a presence in the very birthplace of pop music.

K-pop today,



K-pop tomorrow

Striking a chord

Today's pop fever is clearly different from past peaks of Korean pop, known across East Asia and elsewhere as the “Korean Wave.” Going beyond good looks, nice hair and a mastery of song and dance, Korean pop artists today deliver stories that resonate with fans around the world. BTS released a trilogy on the theme of “The Most Beautiful Moment in Life,” depicting the frustration and anxiety felt by youth everywhere, and used Hermann Hesse's classic novel “Demian” as a motif for its album “Wings.” The group Twice makes a reference to Instagram on the track “Likey,” and sings, “I'm like TT,” where “TT” is the emoticon that resembles tears flowing down from one's eyes. The lyrics are aimed at teenagers. Regardless of nationality or language, the songs contain themes that are universal and easily understood in both East and West. Such attempts have contributed to a convergence in global pop music. Music videos play an important role in helping audiences to understand underlying messages,

even if they don't fully understand the language. Visual elements are effectively incorporated into the overall musical experience to explain unique concepts and the story behind each song, evoking emotions even among foreign listeners. The inclusion of non-Korean members in the pop groups is another factor that helps Korean pop to reach out to audiences abroad. Perhaps it's no coincidence that there are three Japanese members in Twice, the most popular Korean girl group in Japan. This alone gives Twice a competitive edge over solely-Korean pop groups. Major entertainment agencies hold auditions in Korea, Japan, Taiwan and elsewhere to recruit non-Korean members. In the case of SM Entertainment, sub-groups of the pop group NCT have been launched in other countries, including the U.S., mainland China and Japan. The key to success for Korean pop artists, besides high-quality singing and dancing, lies in connecting with fans through storytelling.

Power of social media

In 2012, Psy's global sensation "Gangnam Style" went viral on YouTube. There's no denying that YouTube helped to created the "Gangnam Style" wave. Now, more than ever, social media and similar video-sharing platforms are actively used as tools for marketing and branding. In November 2017, BTS reached 10 million followers on Twitter, a first in

Korea, and was also named the most re-tweeted artist of the year. The pop group not only released mix tapes and cover songs, but also posted self-produced videos two to three times a week, allowing the group to interact with its followers. What made the group a global Twitter star was its efforts to tweet in their fans' languages, so as to reach out to as many people as possible all around the world. Ranked first in a Billboard list of Top-5 New K-Pop Artists to Watch in 2018, Stray Kids is a relatively new group on the scene. Although the groups hasn't made its official debut yet, the boy band has managed to garner a lot of attention by releasing its pre-debut album "Mixtape." The members wrote the songs and the choreography, and relied on social media to pitch themselves to their fans. The group is an exemplary case for the Korean pop music industry in an age of digital and mobile consumption.

Rigorous training

In the song "Glow," the group Stray Kids talks about the challenges and confusion experienced as trainees, and how much they look forward to their official debut. As shown in the lyrics, fame and glory don't come overnight for pop singers. Korean talent agencies have a system of auditions that they use to recruit trainees who have potential to become stars. The three major agencies are SM, YG and JYP. They pick only one or two trainees out of tens of thousands of applicants. The artist Key, a member of the Korean boy group Shinee, was recruited by SM Entertainment from among 8,000 other applicants for the same position. Even after passing the initial audition, trainees undergo rigorous training programs and are assessed at the end of each month. The training period can last from several years to more than a decade. It was 6.5 years for Exo's member Suho, 10 years for Twice's Jihyo, and seven years for Red Velvet's Seulgi. They are carefully evaluated based on singing, dancing, acting and linguistic proficiency. In such a cut throat environment, most applicants spend at least 17 to 18 hours a day honing their skills. Once they make their debuts, the artists are micromanaged by their agencies. Most live in dormitories. This allows for more control, but also strengthens the sense of teamwork, and saves time during busy daily schedules. Sharing their personal lives on social media is how they become more intimate with their fans, but it also means having less time for themselves. The phenomenal success of a few Korean pop stars has, in many ways, overshadowed their hard work and determination.



Audition, audition, audition

Live audition talent shows, such as "Produce 101," "Mix Nine" and "The Unit," have grown increasingly popular on Korean TV. The programs feature a diverse range of talent, from fresh trainees to current pop stars who have failed to enjoy lucrative careers. The most successful group to appear on such a show is Wanna One, the winning team of a recent season of "Produce 101." Wanna One has now set new milestones for other groups, with its first concert garnering more than 20,000 fans and its debut album selling more than one million copies. Instead of talent agencies, viewers themselves, the so-called "national producers," had the final say in determining the debut of Wanna One. TV viewers and fans voted for their favorite trainees and encouraged others to do the same, as though launching an election campaign. Many fans feel a strong sense of loyalty from having watched their would-be stars grow from week to week, and it's no wonder that the group topped the charts from the moment of its debut. Live audition TV shows that capture the journey of growth are universally touching. This helps to build a solid fan base, regardless of age, sex or nationality. Other talent agencies have followed suit, encouraging more fans to get involved in choosing members of a new potential pop group or who should release a new single. The wave of Korean pop music that we've seen across East Asia and elsewhere is continuing to grow. Billboard will be focusing on Korea as the main content generator in the broader Asian market, and plans to expand across the region with the establishment of Billboard Korea. This is an acknowledgment of the vast influence that talented Korean artists and tightly run talent agencies are having on the world of pop music. The convergence of cultures, the use of social media, and efforts to globalize Korean pop music have all aided in the development of today's Korean pop music industry. Today, the K-pop music syndrome continues to be strong.

Every month, KOTRA Express provides answers to some frequently asked questions submitted by foreign-invested companies in Korea and potential investors.

Driver's License

Q.

Can a foreigner exchange his/her foreign driver's license for a Korean one?

A.

A foreigner who holds a driver's license issued by an authorized foreign agency can exchange his/her foreign driver's license for a Korean one after submitting a certificate from his/her home country's embassy proving the authenticity of the foreign driver's license and undergoing a physical exam and/or taking a written test.

Additional information

- A foreigner who was issued a driver's license from a country which recognizes Korean driver's license is only required to undergo a physical exam. To see the list of countries which recognize Korean driver's license, visit the Road Traffic Authority Driver's License Examination Office at <http://dl.koroad.or.kr>.
- To exchange a driver's license which was issued in a country which does not recognize Korean driver's license, the license holder should undergo a physical exam and take a written test. The written test has 40 questions, and foreigners can choose from the following languages: Korean, English, Chinese, Russian, Japanese, Taiwanese, Vietnamese, Indonesian, Cambodian, Filipino (Tagalog). The States of Oregon and Idaho recognize Korean driver's license but require a written test.
- When applying for exchange of a driver's license issued in a country that does not recognize the Korean driver's license, the written test is exempted for those with a D-8 (business investment) visa, their spouse and children under the age of 19.
- Only foreign driver's licenses that have not expired are considered valid, and temporary licenses, learner's permits, driving permits, etc. cannot be exchanged into a Korean license.
- Documents to be submitted
 - Original copy of the foreign driver's license, original copy of passport, original copy of alien registration card, three color photo taken within the past six months (3.5x4.5cm), embassy's confirmation on authenticity of the driver's license, certificate of entry & exit (from year of birth to present), fee of KRW 12,500 (physical examination fee included)

※ KOTRA's Investment Consulting Center (ICC) does not have a physical examination center, so if you are visiting the ICC to exchange your foreign driver's license to a Korean one, receive a physical examination at the nearest designated hospital and submit the exam results (issuance fee: KRW 7,500).

If you have further questions please, contact +82-1600-7119 or visit www.investkorea.org >>How We Can Help >> Online Consulting.



The 14th Job Fair for Foreign-Invested Companies 2019



From June 4 to 5 at COEX in Seoul, Korea, the 14th Job Fair for Foreign-Invested Companies 2019 was co-hosted by the Ministry of Trade, Industry and Energy (MOTIE) and Seoul Metropolitan Government, and co-organized by KOTRA and the Financial Supervisory Service (FSS).

For two days, the job fair offered various programs, with 147 companies operating job counseling booths, 39 companies conducting on-site interviews with job seekers who passed a screening process prior to the event, and 19 companies holding recruitment seminars. Special lectures were also held covering topics related to recruitment as well as providing guidance on career development in foreign-invested companies.

Participation at this year's event was at an all-time high for both recruiting companies as well as job seekers, as 159 foreign companies doing business in Korea met with approximately 15,000 young locals on the search for employment. Of the total number of participating enterprises, 32 were Fortune 500 companies including HP, Unilever and Ikea, and 68 were Forbes Global 2000 companies such as Bayer, 3M and Schneider Electric. By geographical region, there were 61 European, 55 Asian and 47 North American companies from 17 different countries. By industry, 70 companies came from the manufacturing and chemical sector, 37 from sales and distribution, and 26 from services.

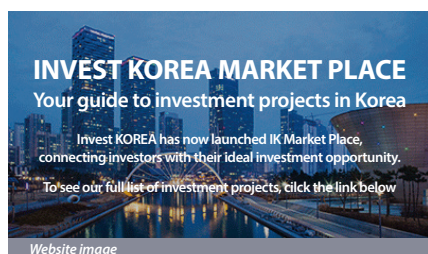
Invest KOREA's Services

One-Stop Service for Foreign Investors

The Inbound Investment Consulting Department not only assists foreign investors and foreign-invested companies in the investment review and implementation stage, but also offers customized services to help foreign investors and their families get comfortably settled in Korea.

Invest Korea Market Place (IKMP)

IKMP is a project aimed at discovering promising Korean SMEs seeking to attract foreign investment and matching them with foreign investors who have compatible needs. Projects looking for investment are posted on our website at www.investkorea.org.



Job Fair for Foreign-Invested Companies

IK organizes annual job fairs to help foreign-invested companies discover qualified local talent, and job seekers find employment through job consultations, on-site interviews, and more.



Exclusive Online Recruitment Platform for Foreign-Invested Companies

IK operates a recruitment platform for foreign-invested companies to support their on-demand as well as regular hiring processes. (<http://kotra.incruit.com>)

Invest Korea Plaza (IKP)

Invest Korea Plaza (IKP) is Korea's first facility dedicated to the incubation and investment of foreign investors. Each year, more than 40 foreign-invested companies rent out offices in the plaza and utilize IK's one-stop service.



Foreign Investment Ombudsman

The Office of Foreign Investment Ombudsman is an organization established in 1999 to provide close aftercare support and grievance resolution services for foreign-invested companies, and is dedicated to resolving any difficulties that foreign-invested companies face while doing business in Korea.

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