

# kotra EXPRESS

## KOREA'S RENEWABLE ENERGY INDUSTRY

Interview

### John M. Kerry

- Honorary Ambassador of Foreign Investment Promotion for Korea
- President of John Kerry Energy Solutions, LLC



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Business News	02
Industry	04
<b>Renewable Energy</b>	

Invest Here	08
<b>Busan</b>	
Economic Opinion	09
Interview	10

Experience Korea	12
<b>Chugugi (Rain Gauge)</b>	
FAQ from Investors	14
KOTRA News	15

### Foreign Direct Investment

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#### IKEA TO OPEN 3RD STORE IN S. KOREA NEXT WEEK

Swedish furniture giant IKEA opened its third outlet in South Korea on Dec. 12 as it strives to strengthen its presence in Asia's fourth-largest economy.

IKEA Korea said the 49,800-square-meter store in Giheung, located about 40 kilometers south of Seoul, will enhance accessibility to residents in the nearby area with new services such as home furnishing consultants and a seamless shopping experience offline and online.

Fredrik Johansson, CEO of IKEA Korea, said the company will continue to widen its customer

touch points under the company's vision "to create a better everyday life for many people."

The Giheung outlet has already hired nearly 500 employees, with 62 percent of them from the region, IKEA Korea said. The average age of its employees is 38 years old, and 65 percent of them are female.

IKEA is set to open its fourth store in the southeastern port city of Busan on Feb. 13. IKEA Korea said it also plans to build smaller stores in downtown Seoul during the first half of 2020 to improve accessibility for city dwellers.

#### SEPHORA OPENS 2ND BEAUTY SHOP IN DOWNTOWN SEOUL

Global cosmetics chain Sephora said Dec. 3 it has opened a second shop in S. Korea in a popular retail area of central Seoul to attract fashion-savvy locals and foreign travelers.

Sephora's second shop landed in Myeong-dong, known as a cosmetics mecca, following its first shop that debuted in the posh district of Gangnam in October.

Sephora said it will target foreign travelers, especially Chinese, in partnership with Lotte Department Store by featuring hundreds of cosmetics, skincare, body and fragrance brands along with its own private label.

The company plans to open a third store in Sinchon, a hip university neighborhood, with a goal of opening 14 outlets in the nation by 2022.

#### BMW REAFFIRMS COMMITMENT TO S. KOREAN MARKET

BMW Group on Nov. 27 reaffirmed its commitment to the S. Korean market as it strives to regain trust following a sales drop caused by a number of cars catching fire in the previous year.

Two BMW directors—Pieter Nota, head of BMW AG's customer, brands and sales operations, and Nicolas Peter, in charge of the German carmaker's finance division—came to S. Korea to meet dealers and look around the German carmaker's facilities.

In a press conference held at BMW's driving center in Incheon, west of Seoul, they said BMW will continue to invest in S. Korea, strengthen partnerships with local companies and launch

more innovative products.

"We recognize Korea as one of the world's powerhouses of high-end technology. It represents innovative thinking, technological progress and tremendous openness to new developments," Nicolas Peter said. "This places Korea in an excellent position to play an important role in shaping future mobility."

BMW advanced to the S. Korean market in 1995 and has invested an accumulated 380 billion won in building a driving center, a logistics center and an R&D center, among other facilities, the company said.

### Trade & Commerce

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#### SEOUL, BEIJING, TOKYO AGREE TO ACCELERATE TRILATERAL FTA TALKS

Top trade officials from S. Korea, China and Japan agreed on Dec. 22 to accelerate their trilateral free trade talks and ramp up efforts to conclude a mega Asia-Pacific trade deal, Seoul's trade ministry said.

S. Korea's Trade, Industry and Energy Minister Sung Yun-mo met China's Commerce Minister Zhong Shan and Japan's Economy and Trade Minister Hiroshi Kajiyama for talks in Beijing on how to accelerate regional free trade negotiations, according to the Ministry of Trade, Industry

and Energy.

During the meeting, Seoul, Beijing and Tokyo agreed to accelerate their talks to conclude a comprehensive, high-level FTA in 2020 to promote deeper economic ties. The first official negotiations for the trilateral FTA started in 2013.

They also agreed to spare no efforts to successfully conclude the mega Asia-Pacific trade pact, known as the Regional Comprehensive Economic Partnership (RCEP).

## **S. KOREA AIMS TO BECOME 3RD-LARGEST COSMETICS EXPORTER BY 2022**

S. Korea aims to become the third-largest cosmetics exporter in the world by 2022 through extensive investment in R&D and concerted marketing efforts, the government said Dec. 5.

The country's makeup products are globally competitive, with growth buoyed by popularity of the Korean Wave and the growing reputation of K-beauty as being high quality yet affordable, the Ministry of Health and Welfare said.

It said despite such gains, there is room for improvement, with S. Korean companies needing to do more to stay ahead of fierce competi-

tion from rivals, like Japan.

"The goal is to ship out more than KRW 9 trillion (USD 7.6 billion) worth of cosmetic products annually and have at least seven of the world's top 100 makeup companies, from four at present," the ministry said.

It added that another goal is to have 276 local cosmetics companies with annual sales exceeding KRW 5 billion in the target year, up from 150 now. Such growth will contribute to the creation of 73,000 new jobs in the sector.

## **Industry**

### **S. KOREAN FIRM SHORTLISTED FOR BULGARIAN NUCLEAR PLANT PROJECT**

The state-run Korea Hydro & Nuclear Power Co. (KHNP) has been selected as one of three potential investors for a nuclear plant project in Bulgaria, according to the Balkan nation's energy ministry on Dec. 20.

The S. Korean energy firm, along with Russia's Rosatom and the China National Nuclear Corporation, were selected as strategic candidates for the new nuclear energy plant project in

northern Bulgaria, its ministry said.

The decision was based on the candidates' experience in building nuclear plants along with their financial capabilities, it added.

S. Korea, which has been seeking to reduce dependence on fossil fuels and nuclear power at home, is currently making efforts to win nuclear plant projects overseas instead.

### **MEMORY CHIP MARKET TO REBOUND IN 2020: REPORT**

The global memory chip market is expected to rebound in 2020, with NAND flash the fastest-growing semiconductor product, a market report showed Dec. 6, boding well for S. Korean chipmakers that have been dominant forces in the sector.

The NAND flash market in 2020 is expected to grow 19 percent, the largest sales growth rate among 33 integrated circuit (IC) products, according to market researcher IC Insights.

DRAM, a type of volatile memory, ranked third with 12 percent growth, just behind a 13 percent gain for auto special purpose IC.

Solid-state computing is expected to push up the 2020 demand for NAND flash, a type of nonvolatile memory, IC Insights said. It added that developments in sectors like 5G technology, artificial intelligence, deep learning and virtual reality will also drive demand for NAND flash and DRAM.

## **Government & Policy**

### **ECONOMIC POLICY TO CENTER ON BOOSTING INVESTMENT, JOB CREATION IN 2020**

S. Korea will implement its economic policy in 2020 to invigorate investment and create more jobs, while laying the foundation to tackle the nation's chronic low birthrate and maintain decent economic expansion over the mid-to-long haul, the finance ministry said Dec. 19.

The economy is expected to grow 2.4 percent in 2020, following an estimated 2 percent expansion in 2019, on the back of an anticipated recovery in the memory chip sector and a series of policy

measures, according to the ministry.

"Top priority will be given to invigorating investments to help boost economic growth and strengthen growth potential," the finance ministry said in a statement, adding that the government will seek "bold deregulation" in 2020 to spur corporate investment.

The ministry said it will allocate about 70 percent of the 2020 budget in the first half of 2020 to prop up the slowing economy.



# Current Status and Prospects of Korea's Energy Storage System Industry

*Korea's ESS products have experienced unprecedented growth thanks to the government's renewable energy policies*

## Introduction

Energy storage refers to the capture of energy produced at one time for use at a later time. It consists of energy storage, such as traditional lead acid batteries or lithium ion batteries and controlling parts, such as the energy management system (EMS) and power conversion system (PCS). Installation of the world's energy storage system (ESS) has increased from 0.7 GWh in 2014 to 4.8 GWh in 2018. This number is expected to grow to 70.5 GW in 2025. The global ESS market in 2017 was about USD 2.42 billion. This amount is expected to increase to USD 15 billion in 2020 and USD 19.9 billion in 2025. During that period average annual growth rate will maintain at 30 percent. Battery-type ESS is being actively adopted, especially lithium ion batteries, due to its great potential for growth. This is largely due to its transformation efficiency and environmental friendly traits. Experts forecast the global lithium ion battery market to expand from 1.8 GWh in 2016 to 8.5 GWh in 2020 and 16.2 GWh in 2024.

## Korea's ESS accumulated capacity: 2/3 of that of U.S. in 2018

As of 2018, Korea's ESS installation level increased by 2.91 GWh or 10 percent of the world's annual installation and reached to 3.63 GWh. Its accumulated capacity is about two thirds of that of the United States. Considering that Korea's land mass is only about 1 percent of that of the U.S., the volume of Korea's ESS installation is enormous. Korea's lithium ion battery production is one of the world's highest and continues to increase rapidly. In particular, major Korean companies like LG Chem Ltd., Samsung SDI and SK Innovation's total production capacity is 65 GWh which will be expanded to 326 GWh in 2023. During that period, the annual average growth rate will be 50 percent.

## Relatively low competitiveness overall

Korea's ESS industry takes up a large share in the global market, but its overall competitiveness is relatively lower than major global companies. In the area of fundamental technology, Korea's competitiveness level is about 82 to

85 percent of that of the world's best. Its parts and material competitiveness stands at about 79 to 84 percent. Its manufacturing technology is relatively higher, standing at approximately 88 percent. However, the overall price level of Korea's ESS industry is generally about 25 to 27 percent higher than those of other global companies. Compared with the explosive expansion of the domestic ESS installation capacity, Korea has recently suffered from fire accidents at ESS sites perhaps because the instability of ESS systems. Therefore, LG Chem and Samsung SDI's sales performance has drastically dropped since the middle of 2018. As a result, Samsung SDI announced its plans to invest KRW 200 billion to secure ESS system safety, and experts expect that these companies will recover their sales levels in 2020.

**<Table 1> ESS annual Installation Ranking of Major Countries (2018)**

Ranking	Country	Share (%)
1	U.S.	36.8
2	Germany	12.7
3	Japan	11.8
4	Australia	11.0
5	S. Korea	10.2
6	UK	3.4
7	Italy	2.7
8	China	2.6
	Others	8.8
	Total	100.0

Source: DOE, Hana Institute of Finance (2019)

&lt;Table 2&gt; Comparison of Competitiveness by ESS Size (2017)

Type	Leading Companies		Competitiveness (Top country=100)			Prices (USD/MWh)		
	Global	Domestic	Fundamental technology	Parts/materials	Manufacturing technology	Global	Domestic	Difference
Medium/Large	ABB, SMA/Yunicos, Parker	Hyosung, Posco, IntechFA	82	79	88	950	700	27%
PCS	SMA, Schneider, Panasonic/Nichicon, Ideal Power/Outback	IntechFA, Sebang, Kukje com., T-Factory, Yujin EneFarm	85	84	88	390	490	25%

Source: INI R&C (2017), Supporting policy and strategy for strengthening of industrial eco-system of ESS industry, March 2017.

&lt;Table 3&gt; Recent domestic/global activities of Korea's ESS Companies

Companies	Project/Strategy
LG Chem	<ul style="list-style-type: none"> <li>- Provided accumulated capacity of 3.8 GWh globally until Dec. 2017</li> <li>- Supply battery for VW's EV production in next 10 years (22 million vehicles in total)</li> </ul>
Samsung SDI	<ul style="list-style-type: none"> <li>- Provided 240 MWh of ESS (70% of total installation capacity) in California in Feb. 2017</li> <li>- Invest KRW 200 billion to investment to secure ESS system</li> <li>- Supply battery for VW's EV production in next 10 years (22 million vehicles in total)</li> </ul>
SK Innovation	<ul style="list-style-type: none"> <li>- Announced active participation in ESS business and developing a new ESS solution</li> <li>- Supply battery for VW's EV production in north America since 2022</li> </ul>
Hanhwa Energy	<ul style="list-style-type: none"> <li>- Final contractor of the USD 140 million project of hybrid system of 55 MW + ESS 208 MWh presided by HECO (Hawaiian Electric) in Jan. 2019</li> </ul>
Doosan Heavy Industry	<ul style="list-style-type: none"> <li>- Awarded the 2019 project award at the World Solar Energy/ESS Conference (acknowledged by its successful installation of 10 Mh on the California Beacon site)</li> </ul>
SK D&D	<ul style="list-style-type: none"> <li>- Top domestic developer</li> <li>- Operating industrial ESS facility of 70 MWh in 8 sites</li> <li>- Differentiated competitiveness in ESS system based on strategical alliance with GridWis which is strong in PMS</li> </ul>
Destin Power	<ul style="list-style-type: none"> <li>- Expanding sales: KRW 54 billion in 2018 from KRW 17.8 billion in 2017</li> </ul>
Kokam	<ul style="list-style-type: none"> <li>- Accumulated capacity of 237 MW globally</li> <li>- Merged to SolarEdge</li> <li>- Expanding its production capacity to 1 GWh from 120 MWh thru investment of KRW 100 billion</li> </ul>
KEPCO	<ul style="list-style-type: none"> <li>- World's largest 376 MW frequency regulation facility in Nov. 2017</li> </ul>

### Major Korean companies penetrating the global market

Major ESS companies in Korea are active players in the global market. LG Chem and Samsung SDI are front runners. Hanhwa Energy and LSIS have developed a new business model that combines photovoltaic and energy management systems. For the successful realization of this project, they are pursuing cooperation with KEPCO, a major electricity supplier in Korea. The power conversion system (PCS) is a crucial part of ESS installation. Experts estimate that the PCS share makes up about 25 percent of the value of ESS. Destin Power is the strongest company in this field, while Kokam is chosen as the highest ranked global company by Bloomberg and Navigant Research. Recently the Volkswagen Group announced the signing of MOUs with LG Chem, Samsung SDI and SK Innovation to supply its production of 22 million electric vehicles in the next 10 years.

### Government strongly supports in ESS demand and R&D technology development

The Ministry of Trade, Industry and Energy (MOTIE) has introduced many efficient support measures to boost Korea's domestic ESS demand. These include the mandatory installation of ESS in public buildings and the revision of special ESS price reduction. For public buildings, there are mandatory measures enforcing a minimum of 5 percent ESS installation for electricity contracts over 1 MW. Recently the government is establishing the 4th Energy R&D Plan in which it will help to develop new energy technology including new energy material which enhances material competitiveness of Korea's ESS industry.

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

# Ulsan, to Become the Renewable Energy Hub of Korea



## Ulsan Statistics (2018)

- GRDP per capita: **USD 56,958**
- Population: **1.17 million**
- Land Area: **1,060 km<sup>2</sup>** (1.7 times of Seoul)
- 4 Districts, and 1 County
- World's largest shipyard
- Strategic focal point in Northeast Asia

## Invest Ulsan 2020

Over the past 50 years, Ulsan has formed Korea's top industrial cluster in the three major industries: automobiles, shipbuilding, and petrochemicals. At the national level, Ulsan still ranks first in the petrochemical industry and second in the automobile industry. As Korea's industrial capital, Ulsan accounts for 11.6 percent of the nation's industrial output, making it a strong location for foreign investment, exporting USD 70.3 billion.

In terms of foreign direct investment, Ulsan's annual foreign direct investment arrival was USD 500 million for the last three years in a row. The FDI amount was over USD 800 million in 2019 alone.

In line with the "Renewable Energy 3020 Project" proposed by the Korean government, Ulsan is developing a large floating offshore wind farm complex to comply with the national energy policy, opening up a new chapter in the shipbuilding industry.

To share the future of the new economy, Ulsan's vision is to become the world's top hydrogen city, aiming to manufacture 500,000 hydrogen cars by 2030.

## Floating Offshore Wind Farm

Ulsan is working on key projects including a 750 KW pilot plant development worth USD 13.6 million, a 5 MW system design technology worth USD 4.4 million, a 200 MW power plant design technology worth USD 3.4 million, and the establishment of a wind farm complex led by the private

sector. Also, a 1 GW wind power project is expected to create approximately 35,000 new jobs, supply power to 960,000 households, and reduce CO2 by 2 million tons per year.

## Hydrogen Economy

Ulsan is planning to become a global hydrogen city by the year 2030. Key project related to this goal includes the establishment of a national hydrogen industry promotion agency, manufacturing 500,000 hydrogen vehicles, building a hydrogen industrial complex, creating 200 companies specialized in hydrogen, and developing a 63 km city pipeline. Ulsan's hydrogen capacity by 2030 is estimated at over 500,000 hydrogen cars, 60 refueling stations and a 200 km pipeline network.

## Oil Hub of Northeast Asia

Ulsan Port aims to become the central location for northern economic cooperation and a global energy hub. To this end, key projects include building an oil and LNG storage facility at the Ulsan Port site spanning 648 m<sup>2</sup>; increasing trade of oil, gas and petrochemical products, and opening an energy trade market in Northeast Asia. The ripple effects from such projects are expected to be the expansion of the energy supply base from oil to both oil and LNG; attraction of large-scale private companies stemming from the corporate demand for LNG power plants; and stable value-added products such as LNG storage.

# 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 renewable energy sector.

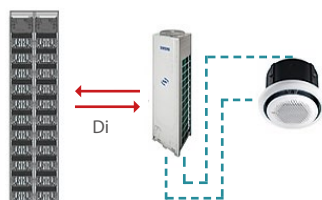
## COMPANY A



NGV fuel tanks type 1

Investment Requirement		Company Profile	
Amount	USD 5 million	Patents and certificates	Registration of 14 patents for cooling device and method to manufacture high-pressure gas cylinder
Investment Structure	Minority	Financial Performance	(Sales) USD 59.55 million (in 2017)
<b>Investment Highlights</b> Because of the increasing global awareness on the preservation of the atmospheric environment, the emission of harmful exhaust gas has been strongly controlled. As a result, the market for fuel containers that can store and transport industrial gas more efficiently is expected to grow steadily. In addition, because Asian countries, including China, which has not established natural gas pipelines, have to urgently develop technology for transporting natural gas more efficiently. The company achieved sales of USD 59.5 million in 2017 through its existing gas container family.			

## COMPANY B



ESS + EHP conceptual diagram

Investment Requirement		Company Profile	
Amount	USD 4 million	Patents and certificates	Registration of a patent for air conditioner management system (control and linkage systems for ESS cooling/heating and communications)
Investment Structure	Minority	Financial Performance	(Sales) USD 0.67 million (in 2017)
<b>Investment Highlights</b> The company has developed and introduced the world's first peak load reduction solution for cooling/heating systems during summer and winter through its ESS heating and cooling systems, being recognized for its technical power through pilot projects. It has secured a total EHP+ESS system after completing the joint authentication of LG Electronics' EHP and strived to preoccupy the local procurement market. When the Korea Electric Power Corporation (KEPCO) approves the technology, the company's systems will be fully introduced.			

## COMPANY C



Microbial cultivation system

Investment Requirement		Company Profile	
Amount	USD 1.5 million	Patents and certificates	Registration of 34 patents, including 13 patents for microorganisms and 4 patents for cultivation system; 12 patent applications including 3 applications in China
Investment Structure	Minority (Financial investment)	Financial Performance	(Sales) USD 1.53 million (in 2017)
<b>Investment Highlights</b> The company is expected to grow at an average rate of 17.08% annually, from USD 3.1 billion in 2016 to USD 6.7 billion in 2022. The microbial feed additives market and the microbial environmental improver market are also growing rapidly.			

For more information, please visit the IKMP page on [www.investkorea.org](http://www.investkorea.org).



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# Grand Policy Directives for 2020

Around December every year, many economists and analysts anxiously await the biannual economic policy directives for the upcoming year, usually administered and arranged by the Ministry of Economy and Finance. The last one published on July 2019, for the second half of the year emphasized three prime targets, namely **economic revitalization**, **innovation**, and the **promulgation of an inclusive economy**. To effectively substantiate these three goals, the ministry stipulated five specific policies for each of the three targets. Regarding the target of economic revitalization, for example, the plan stresses boosting investment, consumption, export and regional economies with tight risk management. Under the innovation target, there are included ways to pace up innovation, to achieve tangible results, to innovate manufacturing as well as the services industries, and to prepare for demographic changes.

Although put in separate categories, economic revitalization and innovation are not divided entities. They are just different aspects of a single object. Economic revitalization can only be achieved through innovation. If economic revitalization is sought after without innovation, such as purposeless building of roads, railways or airports, the economic consequences will be more severe recession and inefficiency. Therefore, economic revitalization must be an outcome stemming solely from innovation. Consequently, the three different targets should be understood as an integral body as revitalization through innovation with the special concern of achieving a fair and inclusive economy. These main themes of the last policy directives in July 2019 is not expected to change significantly for the directives in the year 2020. More focus and resoluteness should be given to accelerate economic revitalization and innovation in the coming plan, because the Korean economy needs economic vitality in investment and private consumption through innovation more than any other time.

This necessity becomes even greater in view of the fact that investment, private consumption and economic growth dynamics have substantially stalled for the last half year. Private consumption which was growing more than 3 percent previously has dropped to less than 2 percent, and investments showed negative growth for 6 consecutive quarters. At the core of this malaise is the global slowdown in trade. Growing faster than 10 percent in the year 2017 and 2018, global exports dropped to negative growth in 2019. Numerous forecasts foretell even gloomier pictures ahead in the year 2020. A small country like Korea has no power to reverse the course of headwinds in the global trade environment but can only learn to adapt to it. In this respect,

the 2020 policy directives seem more crucial than in any other years before.

Here are some of the focal points that the policy plans should include. First, the plan should contain very audacious and bold incentives to investments to put an end to the long streak of the decline in fixed investments. Investment is at the core of future economic growth, and it is the playing ground of innovation. Investment is the key for sustained economic growth and the stepping stone for upgraded economy. Statistical researches showed that a 1 percent increase in investment means a 0.16 percent growth for Korea. In other words, a 10 percent increase in investment contributes to a 1.6 percentage point increase in economic growth. Investment is the creator of jobs, income and technology. Investment is the most powerful contributor to employment. The very success of J-nomics, namely the economic policy of President Moon Jae-in, lies in investment.

Second, as it has been in the past few years, measures to promote fair trade or the grand goal of wiping-off old evils should be conducted in a careful and meticulous way as it should not arouse another round of ice-age among businesses. After a series of talks and discussions, the ministry has already outlined five major categories of structural reform in the 2020 plan. The five areas of reform consist of **industrial innovation**, **public sector**, **labor market**, **adjusting to demographic and technological changes**, and **building social infrastructures**. Here, the ministry emphasized labor market reform above anything else, because it Korea's labor market competitiveness needs to be boosted. Fortunately, issues of fair trade or the wiping out of old evils do not play a central role in the coming 2020 plan. Also illuminating is the role of social capital in transforming the Korean economy. The final words that need to be added to the 2020 plan are that a tangible outcome must be seen by the end of 2020, and that the participation of the private sector is crucial.



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

# ONE-ON-ONE WITH JOHN M. KERRY

*Honorary Ambassador of Foreign Investment Promotion for Korea  
President of John Kerry Energy Solutions, LLC*



*KOTRA Express sits down with John M. Kerry, Honorary Ambassador of Foreign Investment Promotion for Korea, to hear more about his plans to promote Korea's investment environment to American investors and his aspirations for Korea-U.S. relations.*

**J**ohn M. Kerry was primarily educated in Massachusetts, receiving his bachelor's degree from the College of the Holy Cross and master's degrees from Boston College and the John F. Kennedy School of Government at Harvard University. Based on his career experience as former senator for the state of Maine, and former energy director for Maine as well as all of the New England state governors, Kerry was newly appointed as an honorary ambassador of foreign investment promotion for Korea to raise awareness of Korea's outstanding investment environment among U.S. investors. Read on to find out more of Kerry's experience and hopes for Korea-U.S. relations.

## **How did you become interested in Korea?**

My main interest in Korea came from the energy projects I was conducting in New England. I helped out one of my Korean friends who was born in Korea but residing in New Jersey while he was working in the energy field, marketing energy lighting like LED lighting and things of that nature. During the course of my helping him out to sell lighting in New England and throughout the United States, I became interested in Korea because Korean companies were supplying solar panels, lighting, other energy products and equipment like batteries. I was able to introduce him to products from Korea's energy, environmental, as well as agricultural and fishing industries during this time, which sparked my interest in the country.

## **What about Korea's history, economy or culture appeals to you the most?**

Well, what appeals to me more than anything about Korea is the people. Korea has a rich history and I've always been intrigued by the country's economic miracle and societal transformation that took place post World War II—that a country so devastated by war and economic adversity was able to overcome all of those difficulties and create an economic, political and social powerhouse. I've always admired the Korean people's spirit and will to succeed.

Plus, when I was in graduate school, many of my friends

were from Korea, and I always admired how hard they worked and how dedicated they were. Since I've been involved with various business development projects, I've always been a very strong supporter of Korean businesses, because the Korean business leaders that I know take good care of their people and try to work together in a partnership with the American people, which I always found to be very positive characteristics.

## **How interested are companies from the U.S. in investing in Korea?**

Companies that know about Korea and know what advantages are available are very interested. They believe the Korean government has created a positive environment for investment in Korea. They believe that the Korean labor force is strong and well-educated; they believe that the Korean market is stable and growing; and they know that the government has created a good environment for development. They just don't know how to maneuver through the various regulatory, governmental processes and they probably don't have direct connections with banks, so they need to be introduced to such entities.

When I ask people if they'd like to invest in Korea, they usually say, "It's probably safer for me to invest in the U.S. Why should I go halfway around the world when I have many other opportunities in the U.S. and Canada?" To encourage them to explore their options in Korea, I'd like to focus on introducing them to specific people, projects and products in certain industries where I imagine that once they understood the opportunities, they would invest their money. In other words, I'd like to target someone from the solar or battery storage industry, or from agriculture, or even some of the seafood sectors, where there are strong markets in Korea for.

## **What sort of opportunities or sectors are they most interested in?**

I think many companies in the U.S. are interested in the key industries that Korea has a high reputation for such as automotive manufacturing, technology, solar panel and

battery storage. When they know they have an opportunity in Korea and that Korea is now becoming a leader in such sectors and now even in cosmetics, pharmaceuticals, and utilities—in which companies not only in the U.S. but also in the Caribbean are looking to develop industrial grade utilities projects—I'm hopeful that there will be some industries interested in either technology transfer or in partnering with Korea to develop new and unique products.

For example, I'm very much aware of a technology from the Netherlands that has been introduced to me in the U.S. which converts plastics into biofuels—a clean energy technology so to say. I think there might be investors both in the U.S. and Korea that may want to build a plant in Korea and then maybe one later in the U.S. So, these are projects involving products that are cutting edge and renewable, enhance the environment, and at the same time, create jobs.

### **What advice would you give investors and companies from your country seeking to do business in Korea?**

The first thing I'd do is introduce them to advisors from KOTRA. They have a good process established to provide lots of support for potential investors in Korea. We should follow the process of identifying potential investors, introducing them to KOTRA and the programs and services that it offers, and then try to develop a win-win game plan where the investor would put up money as well as receive tax incentives, regulatory considerations, management advice, potential property and business tax delays or abatements—anything that will create a pathway forward, one that would lead to success. I want to help create investment and jobs in Korea and at the same time, reciprocally, earn the investors a good profit for their investment in Korea. Hopefully, in the future, we can further expand our bilateral partnership and build a Korean-owned technology plant in the U.S. where technology would be exported as well as used domestically in the U.S.

### **What sort of support do investors from the U.S. want from Korea?**

Generally speaking, people always want cash. That can be in the form of cash grants, tax incentives, real estate tax abatements, low-interest loans, long-term land leases preferably with no or low cost for a long period of time that would give them an opportunity to grow their business. They also want an open and receptive government at the local, state and federal level—someone that they can talk to and that will listen to their concerns.

Because of the language barrier that sometimes develops between countries, they want an advocate somewhere in the governmental structure advocating for a good public-private partnership (PPP) where the goals are set and people work together to create success, and that if any problems arise, there is someone to help smooth over some misunderstandings that may happen. By and large, people just want a fair deal and a win-win relationship.

### **How can Korea be a more ideal country for American companies?**

Once again, Korea is a great country and I think most Americans understand that. Geopolitically, we're very close to Korea. If you mention South Korea to Americans, they would say we've been partners and allies for many, many years. Most Americans see how hard Korean companies in the U.S. work. If you talk to those who know people working at Hyundai, Kia, Hanwha, as well as local businesses, they see the work ethic and integrity of Koreans.

Sometimes the language and cultural barriers lead Americans to think that Koreans may not be as open-minded and willing to work with them, but I want to break down some of those barriers to help develop good relationships. I'd say that personal relationships are the 99 percent of the battle.

### **What would you like to accomplish during your time as Honorary Ambassador of Foreign Investment Promotion for Korea?**

First off, I'd like to educate a lot of the political and economic leaders in the U.S. on Korea's assets and tell them that there are many opportunities for PPPs that can be developed. Also, I'd like to convince and persuade some of my friends who are in the business and political communities to support Korean enterprises in Korea as well as in the U.S.

I think many businesses in the U.S. would love to do business in Korea if they knew what great opportunities they'd find here—I just don't think they know. Some of the big Fortune 500 companies know, but some of the more modest, medium-sized American companies are not as well aware. So I'd like to bring together in a PPP where various companies that I'm working with in the U.S. could partner with some companies in Korea and develop strong business relationships in the energy, environment, agriculture, fishing, pharmaceutical and even cosmetic sectors.

### **What are your hopes for economic/political relations between Korea and the U.S.?**

I just want to see them continue to build a deeper, closer relationship going forward. I want them to both continue to grow. I'd like to see some bilateral projects take place where we can actually see as a result, economic, political and social success in Korea, where we create jobs and make profit for investors.

At the same time, I want the American investors to realize that Korea's greatest asset is the Korean people themselves, and also generate projects that are mutually beneficial for both of our countries.

*By Grace Park*

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## Chugugi : The World's First Rain Gauge

Chugugi, completed in 1442, was the world's first rain gauge, and has yet to be improved upon by modern science. It allowed precise measurements of rainfall to be taken all around the country over a period of 400 years. The Confucian values of Korea encouraged an understanding of nature, but the rain gauge was also useful for agricultural purposes. The invention of the Chugugi came to be ascribed erroneously to China, owing to the use of the Chinese dating system in the inscription on a surviving model. Although the historical texts of China and Korea show it was a Korean invention, this is not currently recognized in Chinese textbooks that mention the rain gauge.

On 18 August 1441, a new system of rain measurement was invented in Korea, marking a turning point in the history of meteorology. Conceived by Sejong's eldest son Munjong, and developed in collaboration with other scientists, the world's first rain gauge has yet to be superseded by modern scientific instruments.

Trials of the rain gauge, made in 1441, revealed a number of shortcomings with the prototype. These were corrected, and the design was finalized on May 8 of the following year. The recalibrated rain gauge (31.9cm in height, 14.9cm

in diameter) was given the official title "Chugugi." It was distributed to the local authorities throughout the country, together with a manual for its use and manufacture. The technical specifications of the 1442 rain gauge were as follows:

- (1) The rain gauge called Chugugi is made of iron.
- (2) Its height is 1 cha 5 chi [31.9 cm], and its diameter 7 chi [14.9 cm].
- (3) Measurements are taken when the rain has stopped.
- (4) The chuchok ruler measures the water level.
- (5) The date and times of rainfall must be recorded, with details of the beginning and ending times.
- (6) The water level must be measured accurately in cha (303 mm), chi (30.3 mm) and pun (3.03 mm).

The recorded rainfall was then reported in a prescribed manner, giving details of the month, location, time of day and type of rain<sup>27</sup>. The level of water was also recorded in a prescribed manner. With the invention of the Chugugi, the scientists of King Sejong had found a way to measure natural phenomena quantitatively with scientific instrumentation. Under this established regime of rainfall measurement, meteorological data from across the country

27) Rainfall was classified according to 8 categories: minor rain (미우); delicate rain (세우); light rain (소우); moderate rain (하우); damaging rain (쇄우); running rain (취우); heavy rain (대우); ferocious rain (폭우).



was collected for over 400 years. Sejong's scientists made similar measurements of the wind, with a specially designed anemometer. This worked by means of a flag-shaped cloth, which indicated the direction and the speed of the wind. In the first half of the 15th century, no other nation was monitoring weather conditions with precision and on nationwide basis.

The invention of the Chugugi was due in part to the Confucian ideals of the Choson dynasty, and the desire to understand the laws of nature. It was also partly an effort by the government to take a more scientific approach to agriculture. Although the Chugugi was a unique concept developed by King Sejong's scientists, today the invention is erroneously ascribed to China. The rain gauges made during the reign of King Sejong were all lost during the Imjin War (1592~1598), and the few surviving examples are from the 18th century; this is where the confusion begins.

The world was first introduced to the Chugugi in 1910, when a Japanese scholar called Wada Yuji (1859~1918), realizing its importance, included the best photograph of a rain gauge he could find in a dissertation on Korean meteorological observations. He was at the time running a

meteorological station in Chemulpo, Korea. Originally a physics graduate from Tokyo University and a meteorological official from Japan's Ministry of Interior, Wada Yuji had studied meteorology in France from July 1889 to March 1891. Written in French, his paper was entitled "The Rain Gauge of 15th Century Korea," and was sent to his academic acquaintances in France. This was how Chugugi came to be known in Europe.<sup>28</sup>

In 1911, the paper was published in the January issue of the British scientific journal *Nature*, and in the same year an English translation appeared in the 37th issue of the *Quarterly Journal of the Royal Meteorological Society*. Although the Chugugi had now been brought to the world's attention, the photograph in the original dissertation was of a model from 1770. Still the most widely used picture of Chugugi in publications today, it bears the inscription 'Konryung Kyongin Owoljo' (建隆庚寅五月造).

When the Chinese scholars saw the picture, they naturally assumed that the gauge was originally from China, and had then been sent to Korea. 'Konryung' in the inscription refers to Ching dynasty, and 'Kyungin Owoljo' means it was made in the 5th month of the year Kyongin (1770). Unaware that Koreans used both Korean dynasties and Chinese dynasties to refer to specific periods, the scholars concluded that the device was of Chinese origin. As a result, Chinese and Taiwanese textbooks today introduce Sejong's Chugugi as an invention of China, and this view is accepted by western scholars. There is no reference to Chugugi in Chinese literature, nor any historical evidence of a similar instrument being used in China to measure rainfall. In the *Royal Annals of the Choson Dynasty*, there is a clear record of how the Chugugi was designed by Sejong's son Munjong in the period from May 1441 to June 1442, and how models were distributed by the government to each of the Provinces. Currently, however, the history of the Chugugi stands uncorrected.

*Source: Excerpt from "Fifty Wonders of Korea" Vol. 2 Science and Technology, Korean Spirit & Culture Promotion Project*



A Chugugi model from 1770

28) Song-rae Pak, "How the Chugugi had become the Chinese Invention," *History for Tomorrow* 18. (2004): 98-110.

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

### Businesses eligible to move into a complex-type foreign investment zone



**Are there special restrictions on businesses eligible to move into a complex-type foreign investment zone?**



Yes. Businesses eligible to move into a complex-type foreign investment zone<sup>116)</sup> are as follows:

- Businesses accompanying new growth driver industry technology under the Foreign Investment Promotion Act
- Businesses that involve high technology or manufacture high-tech products as prescribed by Article 5 of the Industrial Development Act
- Other businesses determined by the managing authority considering the industrial characteristics of the relevant zone
- Research institutes affiliated with enterprises under Article 2 Subparagraph 3 Item c of the Special Act on Support of Scientists and Engineers for Strengthening National Science and Technology Competitiveness, and research and development businesses under Article 2 (4) of the same Act
- Businesses under Article 25 (1) 3 (a) and (b) of the Enforcement Decree of the Foreign Investment Promotion Act (complex logistics terminal business and business creating and operating a joint collection and delivery complex)

<sup>116)</sup> Article 22(4) of the Foreign Investment Operation Guideline

# Looking for Foreign Investment? Go Online!

KOTRA is embarking on a series of activities to attract investment online.

For the first time ever, a digital-style investor relations (IR) event was hosted by KOTRA and a team of local investors in Beijing in September and October. On the back of positive feedback from investors, the web-based investment promotion campaign was held another time in Singapore on Dec. 10.

Online promotional events delivered through digital mediums have no limitations on the geographical or temporal reach it can have. This allows companies, particularly small businesses struggling to find workforce or financial resources, to have opportunities to focus on growing their online presence as part of brand marketing and to reach out to potential investors worldwide.

Investors who have long been seeking out business partners to possibly work with are welcoming the service, showing their strong preference for a less rigid, casual platform. At the very first round of the "Beijing Online Webcam IR"

event, seven groups of Korean startups and a team of 17 local investors in Beijing were in attendance. Even after their meeting, some of the invitees are still keeping in touch to run subsequent negotiations.

Ha Seung-beom, the head of KOTRA's Investment Promotion Department, said, "Our goal in 2020 is to hold these types of digital IR sessions more frequently, over five times, and to include large cities like Silicon Valley, San Francisco and Tokyo."



## 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](http://www.investkorea.org).

### 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.

### 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.



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