Trade wars in the global value chain era
KIREC 2019
30 Years After the Wall
Recent trends of import substitution in North Korea’s light industry

Global Value Chain
in the light of the ongoing global trade conflicts
From smartphones and cars to computers, nowadays, ideas, labor, materials and components crisscross multiple borders, until the final products eventually get delivered into the stores or to the customers directly.

Today, more than two-thirds of international trade take place within such global value chains, and big exporting nations like Korea and Germany are a vital part of them. For the past years, however, trade tensions between major trading blocks and countries have increased substantially. Korea, heavily depending on trade with China and the US but also Japan, feels the heat and effect on its economy. European countries feel challenges as well. How do such trade conflicts affect global businesses in times when markets are linked more than ever?

This edition of the KORUM analyzes how the rise of global value chains has reshaped the economic contours of globalization and highlights new strategies for markets in the Asia-Pacific region, in particular the materials, components and equipment industries in Korea, to counter the impacts of trade conflicts.

The KGCCI looks back on an exciting year with many projects in the field of trade and investment promotion as well as great encounters with members and partners. Moreover, we look forward to continuously liaise with our customers and members in Korea and Germany to build bridges and jointly explore Korean-German business opportunities as a consistent and trustworthy partner in an increasingly volatile world.

We wish you and your families a Merry Christmas and a Happy New Year in 2020!
Trends in Germany
On November 9, 1989, the Berlin Wall was opened, and the process of reunifying West and East Germany began. 30 years have passed during which the two halves of the country politically and economically grew back together. Find out more about the economic development and the unique business opportunities of the six federal eastern states – Mecklenburg-Vorpommern, Thuringia, Saxony, Saxony-Anhalt, Brandenburg and, of course, Berlin.

Cover Story
Trade wars in the global value chain era
Supply chain resilience for future Asia-Pacific operating models
Changes in Global Trade Trends and Korea’s Strategy for Materials, Components and Equipment Industries

Markets & Trends
Korea-Germany Tech Conference
What’s next after Korea’s world’s first launch of 5G?
KIREC 2019
Shaping the future of multinational research cooperation in Korea

Tax & Legal
Review of deductibility of intra-group service fee for the Korean tax purposes

North Korea
From Chinese dominance to North Korean brand development

Trends in Germany
30 Years After the Wall

Human Resources
The Academia of Ausbildung

KGCCI Member’s Spotlight
Inspiring CSR: Audi Volkswagen Korea

Inside KGCCI
MoU between KGCCI and FOMEK
Fairs & Exhibitions
KGCCI in Germany
Trade Promotion
KGCCI Events & Seminars
Meet Our Team : Hee-Kyung Choi

Korea Life
A system outage in the most wired megacity worldwide

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Cover Story
Nowadays, products are “made in the world”. More than two-thirds of global trade takes place within global value chains. While “breaking up” the production process provides opportunities for integration of rich and poor economies, escalating trade conflicts can have severe impacts on core industries of a country. Read more about strategies to keep goods moving and products continue to cross borders efficiently and steadily in the light of ongoing trade tensions.

Markets & Trends
Even if the Korean-Japanese economic relations should turn directions towards reconciliation, Korean companies have realized the inordinate dependency on certain Japanese imports. KGCCI presents a list of the most affected items provided by KITA. The MoU between KITA and KGCCI, the Korea-Germany Tech Conference as well as the bilateral conference on 5G and Industrie 4.0 reflect the Korean government’s efforts to find trustworthy partners in an increasingly volatile world.

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Trade Wars in the Global Value Chain Era

Trade wars have always been economically costly, but they are particularly expensive in the 21st century Global Value Chain (GVC) Era.

The nature of global commerce has changed dramatically over the past 40 years, with the meteoric rise of Global Value Chain (GVC) trade. Simply put, countries and companies make goods differently today than in the past. In the 21st century, products are “made in the world” as never before, as firms combine raw materials, inputs, labor, and ideas – the many slivers of value added that ultimately make up a final product – each sourced from around the world according to specific cost-benefit tradeoffs for every component part of the value chain. GVC trade – measured as a dramatic rise in the trade in value-added sub-components relative to trade in final goods – is the quantifiable manifestation of this “made in the world” global production revolution. This phenomenon has been made possible by innovations in communications and transportation technologies, together with institutional and market reforms, which have allowed scores of countries to find new footholds in the global economic marketplace.

The rise of GVC trade has also reshaped the economic consequences and political contours of trade protection. Trade wars have always been disruptive, but they are particularly expensive and divisive in the GVC Era. There are three critical implications of GVC trade that promise to make today’s trade wars more economically costly and more politically complex than previous trade wars.

First, GVCs amplify the effects of tariffs. Because tariffs are typically applied to the gross value of a good when it crosses the border, rather than just the “new” value added, every border crossing increases the total tariff bill associated with production.

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First, GVCs amplify the effects of tariffs. Because tariffs are typically applied to the gross value of a good when it crosses the border, rather than just the “new” value added, every border crossing increases the total tariff bill associated with production.
For example, suppose that a pair of blue jeans is made in three stages: first, raw cotton is grown in country A and exported to country B, then country B processes the cotton into denim fabric, which is exported to country C; finally, country C cuts, sews, and finishes the jeans to be sold, ultimately, in country A. If each country imposes a uniform 10% tariff on all imports, a tariff will be paid three times during the production process, with escalating costs as the gross value of trade increases from raw cotton, to the cotton fabric, to the finished product. Had the jeans been produced start to finish in country C, the tariff would be paid just once (when the final product is shipped to the consumer in country A), and the total cost of production inclusive of tariffs would be lower.

The implication is immediate: the costs of higher tariffs in trade war will be greater (potentially many times over) in a trading system with GVC-trade than in an otherwise equivalent world without it. The corollary discussed further below is that higher tariffs in general, and trade wars in particular, may induce firms to shorten or otherwise reshape their global supply chains.

The second distinction concerns not the total cost of a trade war, but the distribution of that cost across different stakeholders: GVC linkages mean that the burden of tariffs falls differently among consumers, workers, and firms involved throughout the value chain. As explained below, some of the costs of trade protection may ultimately be borne by upstream producers in the country imposing the tariff, while some of the producer-side benefits from trade protection enjoyed by local import-competing firms may be passed along to foreign interests.

The same example of blue jean production serves to illustrate. Suppose now that country A's consumers constitute a sufficient share of global demand for blue jeans, then an increase in country A's tariff will push down the export price received by the makers of blue jeans in country C. That is, the incidence of the tariff will be shared by consumers in country A, who pay higher prices, and producers in country C, who receive lower prices, with the government of country A collecting the difference as tariff revenue. By the same logic, if country C's jeans producers are an important source of global demand for denim fabric, producers of jeans in country C will be able to pass-on some of the fall in their revenue to producers of fabric in country B, who would then receive a lower export price. In turn, if country B is a sufficiently important market for country A's raw cotton, the price of cotton in country A will also fall. Thus, ultimately, the costs of country A's tariffs on imported blue jeans will be shared between country A's consumers and all of the producers of value added embedded in the imported blue jeans, including, in this example, the producers of raw cotton in country A.

Meanwhile, if country A had a local producer of blue jeans competing head-to-head with imports from country C, that producer would gain from the additional protection afforded by the 25% tariff. But if that local producer was owned by a foreign interest, or sourced its inputs from abroad, part of the benefit of that trade protection would again be passed up the value chain, outside of country A. GVC linkages mean that country A's benefit from tariff protection may be eroded, even as it must internalize more of the costs of its tariff hike. The extent to which producers in each country bear the costs of a tariff depend on a host of factors, including market power, bargaining relationships, input customization, trade volume, and consumer demand. But whatever the details, the upshot is the same: in a world with GVCs, the economic fallout from a trade war may extend far beyond the immediate “intentional” targets to include countries and companies around the world; potentially including the country that imposed the new protection at the outset.

Third, since GVCs are the result of strategic sourcing and foreign investment decisions of globally-engaged firms, tariffs may have large, long-lasting, and unanticipated consequences for the pattern of global production. If rising trade costs reduce the profitability of trade, some firms may engage in the type of “factory-shifting” behavior described above: consolidating production in Asia, central America, or Europe.

Likewise, recent trade frictions between Japan and Korea may have implications for which firms choose to consolidate production to mitigate the costs of tit-for-tat tariffs and the uncertainty of future trade wars. Early evidence suggests that the recent US trade war is already taking a hefty toll on US firms and consumers. Would the same be true if tariffs began to escalate between Korea and Japan?

The consequences of today’s trade tensions may be slow to unfold, but they promise to be long lasting once they do.
Over the past two decades, we have seen a gradual trend towards centralized regional operating models and mega factories supplying products globally in many industries. Such structures were largely driven by the harmonization and globalization of customer demand, enabled by a pre-BEPS (Base Erosion Profit Shifting) global tax framework and a relatively benign global trade environment.

The recent changes in international geopolitical, tax and trade winds will require a different course to be navigated by companies seeking to sustain and grow in the Asia-Pacific region. Expecting unexpected shocks and surviving such events will be the new norm and will force companies to re-examine their supply chains and operating models, so they become more agile and resilient, achieving supply chain resilience.

This article seeks to look deeper into the factors driving the changes in the operating models and how to achieve increased supply chain resilience to deliver increased stability, revenue enhancement and cost reduction.

Increase in complexity of Asia-Pacific operating models

The increase in complexity of Asia-Pacific operating models is inevitable given the ever-evolving and voluminous changes with which companies and supply chains have to deal with. Beyond the China-US trade standoff, which would probably go down in history as the singular defining economic event of the late 2010s, careful observers will note that Asia-Pacific supply chain disruptions are shaped subtly by a host of factors and trends.

Political industrial trade tensions such as that between Japan and Korea have already negatively affected the world’s technology supply chain; and we are awaiting possible fallout from the Hong Kong political impasse if this continues long-term.

Companies subject to competitive and economic pressures worry about the tradeoff between costs and ethics, industry shifts in demand and supply, and the changing cost structure of locations abetted by technology and digital transformation such as 3D printing and the eventual shortening of supply chains. Large geographical developments like the Belt Road Initiative and emergence of the Northern Sea route have a definite lasting impact on movement of goods and people, no matter how quietly or slowly the change occurs.

Lastly, BEPS 2.0 and the consequential tax regulations and new nexus and profit attribution principles are likely to lead to re-evaluation of supply chains and business structures by companies and governments alike. The crux is how should a supply chain achieve resilience in the face of this onslaught of complications with unknown and intertwined implications?

Responses – examples and theories

The first step is to assess the current state of supply chain resilience through a strategic review. Several tools are available for both self-assessment as well as aided assessment, including but not limited to the EY supply chain current state maturity review tool. Comprehensive reviews can identify key areas of weaknesses and assist to formulate appropriate changes going forward.

With the current state understood, companies can then choose to build in the necessary mechanisms or strategies in the physical supply chain, the financial supply chain or operating model, or all three to help improve resilience to shocks. A common financial supply chain adjustment especially for China-based multinational companies faced with US tariffs is to implement the first sale for export methodology. In addition, in recent months, we are seeing many companies give up on hope that the trade winds will return to their familiar course and move into active planning for alternative or multiple manufacturing locations.

AmCham China survey in May 2019 pointed out that 41% of the respondents have considered or relocated manufacturing facilities out of mainland China. While some toy and mobile camera makers have shifted production to Mexico, personal computer makers looked to Taiwan, tire, machine tools and metal makers to Thailand. The largest beneficiary seems to be Vietnam where South China Morning Post reports that a Guangzhou-based transport company has helped ten firms move their entire plant from mainland China since 2018 and five
hundred companies moved part of their production. What is less well publicized is that Chinese factories in Vietnam such as shoemaking, furniture and clothing manufacturers have closed their Vietnam plants and moved back to China due to rising costs, low productivity and difficulty in buying land. Anecdotal accounts from Vietnam industrial park managers suggest that many of such supply chain movements could have been caused by being coerced to make hasty decisions, with one account taking just nineteen minutes to make a land purchase decision. Clearly, a well-considered strategic approach aiming at stability and resilience can go far to avoid costly reversion, especially for a major design decision on location. In general, from our experience, manufacturing location studies should consider factors such as incentives, property, labor cost and availability; while regional distribution centers consider ease of doing business, custom environment, logistics competitiveness amongst others. Separately, if the location consideration is for a supply chain control tower, more emphasis can be placed on corporate tax, talent availability and operating costs.

In addition to the above considerations, companies need to be specific in asking themselves what will be the most suitable and resilient supply chain of the future for them and how they can achieve it?

The supply chain of the future
In general, the resilient supply chains of the future will be likely decentralized, yet interconnected ecosystems facilitated and underpinned by technology enablers such as data analytics, machine learning and the use of Artificial Intelligence. Faced with more factories, more markets and extended supply chain partners with more and different responsibilities, companies need to be on top of total landed cost trade planning, trade land optimization, capital expenditure planning and even agile tax incentive planning amongst others. They will require these greater planning and management abilities executed on a real-time basis and must necessarily turn to more advanced technologies to access diverse data points to formulate increasingly complex strategies. Heavy technology evolution may also result in less need and desire for co-location of resources.

The likely new operating models evolving to manage these supply chains will include flexible supply chain control towers and supply chain centers of excellence. Such centers will likely involve distributed IP models and enabled by internal and external cost sharing arrangements, a need to balance the network operating model underpinned by profit split, and an extended industry supply network with value concentration in-house.

Such decentralized supply chain ecosystems require enabling tax models including but not limited to alternative transfer pricing models such as profit split mechanisms and process contribution analysis methods reflecting the value generation of the parties involved. Careful tax planning is also required to consider available tax incentives as well as adequately plan and mitigate wider direct and indirect tax risk. Critically, it is important that mechanisms are in place to avoid decisions being taken that may result in unnecessary tax costs being added to the supply chain.

Above all else and eventually at the end of the day, it is essential to businesses that goods keep moving and products continue to cross borders efficiently and steadily even in light of unexpected shocks. To accomplish this optimally and resiliently, companies need to consider the complex effects of global trends impact on the region, the responses of supply chain partners and competitors, and the likely evolving Asia-Pacific supply chain of the future. Effective management requires an integrated approach that takes into account tax, trade, technology, business and supply chain planning and management, rather than silo decision making.

For forward looking and risk-resistant businesses, there is no better time to start than now.
Changes in Global Trade Trends and Korea’s Strategy for Materials, Components and Equipment Industries

Implications of Japan’s export control and the importance of materials - components - equipment

On July 4, 2019, the Japanese government imposed a ban on exports of three items - Etching Gas (hydrogen fluoride), Photo Resist and Fluorine Polyimide - to Korea. About a month later, Japan also excluded Korea from the White List, which is the list of countries subject to the simplified export permits, significantly tightening its control of exports of strategic goods bound for Korea. The list of strategic goods placed under the tightened control by Japan includes a large number of high-tech materials and components and equipment needed for the production of semiconductors, displays, automobiles, machinery and secondary batteries, which are Korea’s main industries. Japan’s export regulations are characterized by focusing on high-tech intermediate goods that Korea has not easily made inroads into due to relatively low commercialization profits and high risks of technology development. It is no exaggeration to say that the move is a kind of transitional event that reveals Japan’s intention to reorganize the GVC (Global Value Chain) system into a new system centered on Japan’s advanced materials, components and equipment and through the disruption of the current GVC system, which Korea dominates, while sharply attacking the weaknesses of Korea’s so-called ‘Comorant style’ industrial and trade structure, which have continued since the industrialization of the 1970s.

Over the past period, Korea has continued to grow under the benefits of global free trade. Korea, along with Germany, has the world’s highest level of dependence on trade and has also grown based on the highest level of global value chain strategy and participation. However, the global trade environment has recently been on a growing trend of uncertainty. Trade disputes between the U.S. and China are expected to be prolonged, and the trend of de-globalization is accelerating as major manufacturing powers strengthen their protectionist stance. While China’s status as a global production hub has been weakening as the industrial structure has been upgraded around cutting-edge industries and high-and consumer goods along with the continued rise in manufacturing costs, the global industrial landscape has also changed significantly with emerging manufacturing countries such as ASEAN and India emerge as one of the pillars of the new global production network. In addition, the existing global value chain’s basic strategy focusing on reducing production costs is also changing towards reshoring or localization, as technological advances such as the 6th industrial revolution weaken the dependence on low-wage labor and increase the importance of high-value technology-intensive industries. Both global industrial and trade environment changes are profoundly affecting our economy with high levels of external openness and participation in GVC.

Materials, components and equipment are key to secure sustainability and stability within the global value chain in a rapidly changing global industry landscape. Japan’s export regulation is significant in that it provided an opportunity to reflect on the importance of stable supply of key materials, components and equipment that Korea has neglected to invest and nurture due to difficulties in acquiring technology, poor market size, and path-dependent tendency etc. In particular, cutting-edge materials, components and equipment are very important in terms of enhancing the added value of manufacturing industries and driving quantitative and qualitative growth in Korea’s economy, which has recently been facing a slowdown in growth.

Materials, components and equipment industries which have grown into a pillar of Korean economy, but recently reaching the inflection point of structural upgrading

Recognizing the importance of high-tech intermediate goods industries in upgrading manufacturing structure early on, Korea has also been strengthening its policy support at the state level. Since 2003, when the [Act on Special Measures for the Promotion of Specialized Enterprises of Materials and Components (Industry) was enacted, Korea’s materials, components and equipment industries have grown as a major player in the Korean economy thanks to strong import replacement and export industrialization strategies. Since 2001, R&D investment worth about 5.4 trillion KRW has been carried out, and during this period, the foundation has been laid for making the lower structure of the manufacturing industry sound by securing technologies for localizing materials, components and equipment, and establishing various infrastructures, including a demonstration testbed and a reliability certification center. In addition, policies were implemented to address the long-standing challenges facing Korea’s materials, components and equipment industries, such as specializing and scaling up materials, components and equipment businesses. Thanks to such efforts by the public and private sector, the production volume of Korea’s materials, components and equipment industries, which stood at about 260 trillion KRW in 2001, more than tripled to 786 trillion KRW in 2017, and its share in manufacturing expanded from 43.7% in 2001 to 51.8% in 2017. Exports have achieved even more remarkable results. Exports of materials, components and equipment, which accounted for 42.9% of Korea’s total exports in 2001 worth 64.6 billion USD, more than quintupled to 340.9 billion USD in 2018, and their share in the total market expanded to 56.4%. As a result, Korea has transformed itself from a deficit of 840 million USD in materials, components and equipment into a huge surplus of 137.6 billion USD, and has become the world’s 5th largest country in materials, components and equipment. However, despite its stellar performance in quantitative terms, it is true that growth in quality is still progressing slowly. Korea’s materials, components and equipment industries have rapidly grown around general-purpose products and components, and large export companies, maximizing the efficiency of mass production and international division systems, taking advantage of the latercomer status. However, the product structure built around general-purpose products allowed China to catch up, and the industrial structure centered on components and assembly industries caused high overseas dependence on core materials and equipment. High overseas dependence on core intermediate goods is the main reason for the low value-added rate of our manufacturing sector and the growth dilemma in which imports rise as exports increase. This is due in large part to structural vulnerabilities in our materials, components and equipment industries.

The vulnerability of trade structure by item in materials, components and equipment becomes more apparent in the trade structure by country in materials, components and equipment. China is the country representing the biggest share in Korea’s trade in materials, components and equipment, accounting for 33% of Korea’s exports and 28% of imports as of 2018. However, the export structure relying on China has become the main reason for slowing down the overall export growth of materials, raw materials, components and equipment due to robust growth in global manufacturing industries and driving quantitative and qualitative growth in Korea’s economy, which has recently been facing a slowdown in growth.

**Figure 1 Export & Import Dependence of G20 Countries**

Export/import dependence means the value of the total export/import amount divided by GDP. Source: Yonhap News
elements and equipment as China’s strategy to increase the self-sufficiency rate of intermediate goods took off. On the other hand, Japan is the country with which Korea has the most trade deficit. Japan accounts for only 4.3% of Korea’s exports of materials, components and equipment, but imports account for 18.2%, which is very high. The trade structure with Japan illustrates the vulnerability of the manufacturing industry structure faced by Korea now. As of 2019, Korea’s trade deficit with Japan in materials, components and equipment industries stood at 22.4 billion USD, accounting for nearly 93% of Korea’s trade deficit with Japan in the whole industry. The most noticeable area of trade deficit is “components and chemical products”, which are key materials essential to the production of Korea’s major industries such as semiconductors and displays, and imports of compounds and chemical products from Japan are rapidly increasing as exports of Korean semiconductors and displays increase. Japan’s export regulation is significant in that it demonstrated that these structural vulnerabilities could have the ripple effect to the extent of impacting the entire industrial ecosystem, suggesting that new strategies are needed in terms of upgrading and reorganizing product and market structure.

New strategic direction in materials · components · equipment industry

The strategy to strengthen materials, components and equipment industries to secure sustainable growth and stable supply chains amid changes in global industrial and trade trends needs to focus on establishing a robust infrastructure for our main industries to transform into a future-oriented industrial structure, while actively responding to new trends in the industry. In addition, it is necessary to enhance the effectiveness of policies through policy combinations based on the path and characteristics of technological innovation and growth in materials, components and equipment industries. In particular, the government also needs to play a role as a first buyer for innovation and as a first buyer of innovation performance, considering that they are market failure areas which have high risks but bring a large amount of industry-wide ripple effects in

Figure 2

Growth of Korea’s material, components and equipment industries

Unit: trillion KRW

Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Materials</th>
<th>Equipment</th>
<th>Components</th>
<th>Materials + Components + Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>240.0</td>
<td>107.6</td>
<td>104.6</td>
<td>452.2</td>
</tr>
<tr>
<td>2010</td>
<td>673.7</td>
<td>258.1</td>
<td>277.8</td>
<td>1,209.6</td>
</tr>
<tr>
<td>2017</td>
<td>785.7</td>
<td>340.9</td>
<td>24.8</td>
<td>1,131.5</td>
</tr>
</tbody>
</table>

Source: Materials & Components Technology Network

Export

<table>
<thead>
<tr>
<th>Year</th>
<th>Materials</th>
<th>Equipment</th>
<th>Components</th>
<th>Materials + Components + Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>64.6</td>
<td>21.2</td>
<td>15.5</td>
<td>101.3</td>
</tr>
<tr>
<td>2010</td>
<td>239.6</td>
<td>65.9</td>
<td>7.6</td>
<td>313.1</td>
</tr>
<tr>
<td>2017</td>
<td>222.1</td>
<td>54.1</td>
<td>14.1</td>
<td>290.3</td>
</tr>
</tbody>
</table>

Source: Materials & Components Technology Network

16 17

Korea’s Strategy for Materials, Components and Equipment Industries

By JUN LEE

Korea Institute for Industrial Economics & Trade (KIET)

www.kiet.re.kr

Korea’s Strategy for Materials, Components and Equipment Industries

The strategy to strengthen materials, components and equipment industries to secure sustainable growth and stable supply chains amid changes in global industrial and trade trends needs to focus on establishing a robust infrastructure for our main industries to transform into a future-oriented industrial structure, while actively responding to new trends in the industry. In addition, it is necessary to enhance the effectiveness of policies through policy combinations based on the path and characteristics of technological innovation and growth in materials, components and equipment industries. In particular, the government also needs to play a role as the first buyer for innovation and as the first buyer of innovation performance, considering that they are market failure areas which have high risks but bring a large amount of industry-wide ripple effects in the event of development success.

Sophisticating investment strategies

To this end, it is necessary to maximize efficiency of investment by transforming investment strategies greatly in materials, components and equipment. First of all, it is necessary to expand the scope of support limited to materials and components to equipment that directly affects high value-added products, and to expand the size of investment by considering the increase of targets, trend of global investment, high risks, and increased demand for related investments etc. Also, it is necessary to select priority investment sectors, based on the global competitiveness level of the related demand industry in Korea and the base of Korea’s materials, components and equipment industries, and prepare policy combinations that meet the respective conditions. For example, in the case of major industries that have maintained global-level competitiveness by maximizing the effects of economy of scale, such as steel and petrochemicals, the government should continue to push for support policies to maintain its competitive edge in the global market. On the other hand, for high-risk areas of investment, such as high-tech materials and core components, a market receptive investment portfolio should be formed through careful industrial structure analysis on feasibility of technology and commercialization, possibility of securing domestic and international markets, and contention with rivals such as China and Japan. In addition, it is necessary to manage areas that need to be approached in terms of industrial security, from a long-term perspective through separate investment criteria, as was illustrated by Japan’s recent regulation on exports.

Creating an industrial ecosystem which can nurture small specialized champions

Next, it is necessary to establish a whole-cycle support system focusing on industrial performance, such as taxation, finance, M&A and regulation, away from support policies only driven by technology, such as R&D and HW infrastructure establishment in order to upgrade and boost vitality of the industrial ecosystem around the materials, components and equipment industries. In addition, it is necessary to innovate the R&D allocation and performance assessment systems so that research results can be communicated significantly to the industry sites. Further to this, it is necessary to innovate the development method in order to accelerate the technological development of small and medium businesses specializing in materials, components and equipment, and to drastically ease the cost burden of small and medium businesses in innovating, through the expansion of the sharing base of innovative information and bold investment in development and process based on intelligent information technology such as artificial intelligence and big data, and reliability-related infrastructure. In addition, it is necessary to expand institutional devices for each player to benefit mutually by securing early sales channels such as cooperative R&D programs between supply and demand companies, technology cooperation between civilian and military and building infrastructure using domestic equipment, and by significantly expanding the program to enhance the interconnection among players in the value chain.

Securing new markets through innovation in strategies for entering global markets

In addition, the government needs to link domestic industrial policies with trade policies. This means enhancing the effectiveness of the policies by strengthening the connectivity between each policy from R&D to market exploration. Exploring overseas markets such as entering OVC is very important in terms of diversifying Korea’s export and import portfolio of materials, components and equipment and vulnerability-related stabilizing supply chain. This is a way to resolve the dependence of Korea’s materials, components and equipment on China and the chronic trade deficit with Japan, and it also means that Korea should explore new markets and form a new production network through easing market structures concentrated in major countries such as the U.S., Japan and China. In this regard, a careful entry strategy needs to be established based on thorough analysis of the industrial base and growth stages of ASEAN, India and Latin America, which have recently emerged as an alternative for market diversification. In particular, Korea needs to differentiate itself from Japan and China, which already form a strong supply chain, through a win-win economic cooperation partnership that allows the sharing and transfer of Korean-style innovation systems. However, a strategy must be accompanied to mitigate existing trade risks following entering new markets.

Reorganizing laws and systems to facilitate the transformation into a technology-intensive industrial structure

Finally, laws and systems need to be reorganized in order to transform and foster the materials, parts and equipment industries into high value added and technology-intensive industries. It is necessary to supplement and strengthen the current [Act on Special Measures for the Promotion of Specialized Enterprises of Materials and Components’ Industry] in line with the recent drastic changes in technological innovation, the advent of new trends in the economy and industry, and the changes in the status of the materials, parts and equipment industries.

The most important thing is the innovation will of enterprises.

However, the most important thing is the willingness of companies to innovate. The government’s role as the first investor in innovation, the first buyer of innovative products and the creator of a fair market environment can bear its fruit only when there is bold investment and effort in innovation by companies. Both government policy innovation to eliminate corporate uncertainty and bold corporate investment in the future are needed.
O n October 8, the Korean-German Trade Association [KITA] and the Korea-Germany Tech Conference [KGCCI] signed a MoU agreement to strengthen cooperation between Korean and German companies on parts, materials and equipment and to build an open innovation platform for cooperation between companies and startups from both countries.

Minister Sung Yoon-mo said in a congratulatory message, "The four industrial revolution cannot be realized without the support of new materials and parts. Korea and Germany should concentrate bilateral cooperation on materials and components as they are the best partners to lead the global market."

Dr. Hye Jin Kim, Chairman of KITA, Sung Yoon-mo, Minister of Trade, Industry and Energy, and Yong Ju Kim, Chairman & CEO of KGCCI, signed the agreement. They are (From left to right).

**Table: List of Items with high import dependency on Japan**

<table>
<thead>
<tr>
<th>No</th>
<th>Classification</th>
<th>Item</th>
<th>Total</th>
<th>Imports from Japan</th>
<th>Imports from Japan's Share in Korea (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chemical elements stipulated for use in electronics</td>
<td>111,186</td>
<td>43,528</td>
<td>39.1%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Apparatus for preparing or checking semiconductor wafers or devices</td>
<td>12,515</td>
<td>8,850</td>
<td>69.5%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Machinery of coating and developing or stabilizing photoresist</td>
<td>588,707</td>
<td>526,001</td>
<td>90.7%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>For measuring or checking semiconductor wafers or devices</td>
<td>685,901</td>
<td>463,317</td>
<td>67.5%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ceramic or mica</td>
<td>45,867</td>
<td>35,631</td>
<td>77.7%</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Monolithic integrated circuits</td>
<td>14,944,668</td>
<td>1,541,360</td>
<td>10.3%</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>For blank mask used in the manufacture of semiconductor, or of FPD (flat panel display)</td>
<td>123,510</td>
<td>80,850</td>
<td>65.5%</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Microprotectors, optical emitting diodes, light-emitting diodes</td>
<td>82,207</td>
<td>40,276</td>
<td>49.7%</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Machines of coating and developing or stabilizing photoresist</td>
<td>1,318,276</td>
<td>566,836</td>
<td>23.3%</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Photolithography systems</td>
<td>1,162,691</td>
<td>471,571</td>
<td>39.8%</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Automobiles</td>
<td>1,162,691</td>
<td>471,571</td>
<td>39.8%</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>For measuring or checking semiconductor wafers or devices</td>
<td>588,707</td>
<td>526,001</td>
<td>90.7%</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>For measuring or checking semiconductor wafers or devices</td>
<td>685,901</td>
<td>463,317</td>
<td>67.5%</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
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<td></td>
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<td>29</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
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<td></td>
</tr>
<tr>
<td>30</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>33</td>
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<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Grinding or polishing machines for processing of wafers, including lapping machines</td>
<td>110,680</td>
<td>98,395</td>
<td>88.9%</td>
<td></td>
</tr>
</tbody>
</table>

* The main import companies on the list might not be identical to the potential import companies for those listed items.
* Unit: thousand USD / * Japan's Market Share: The amount of Korea’s imports from Japan / The amount of Korea’s total imports (2018)

Korea-Germany Tech Conference
5G is the new generation wireless communication technology that was launched commercially by three South Korean mobile carriers in April 2019 for the first time in the world. While 5G has a huge potential in improving consumer experience, it seems to hold an even bigger promise to enterprises. This industrial advantage that 5G brings about has already begun to result in various early use cases in South Korea.

Responding to this trend, Fraunhofer Representative Office Korea co-hosted a conference with the German Embassy Seoul and the KGCCI in Seoul in October which gathered together Korean and German experts in 5G and Industrie 4.0.

What’s next after Korea’s world’s first launch of 5G?

Korean and German Experts discussed the role of global cooperation in 5G application for Smart Factory

Technical advances, Industry-wise, 5G industry consists of the following sectors: Infrastructure (Small Cell, RAN, Macro Cell), Network Technology (SDN, NFV, MEC, FC), Chipset Type (ASIC, RFIC), and Application (Automotive, Consumer Electronics, Retail). According to Ericsson and Arthur D. Little, some industries are expected to be highly influenced by 5G, e.g., energy and manufacturing.

5G will Create New Opportunities in Many Industries, Especially Smart Factory

The industrial application spectrum of 5G is very broad, ranging from energy, healthcare, finance to automotive and manufacturing. However, this does not mean 5G will impact every industry at the same time, because 5G is a constantly evolving technology and different markets require different levels of technological advancement. It is widely expected that we will start to witness first real-life 5G industrial innovations in the manufacturing and Smart Factory industries. Smart Factory, sometimes referred to as Industrie 4.0, especially in Germany, is a next generation production process that can self-optimize performance via internet connection and usually integrates intelligent systems such as big data analysis, AI, and even digital twin. 5G usage in Smart Manufacturing is already on the rise, which is not only one of the most important industrial use cases of 5G but also where Germany’s strength lies in.

Cooperation Not Only Across Industry But Also Across Country is Important

The Fraunhofer Society is a German research organization with 72 institutes spread throughout Germany, each focusing on different fields of applied science. Fraunhofer Institutes work for clients in business as well as for the government, and actively engage in international collaborations. Fraunhofer Representative Office (RO) Korea supports the Fraunhofer Institutes in initiating projects with Korean institutions, partners and customers.

In addition to the high potential that 5G technology itself presents, South Korea had a head-start in 5G by launching the world’s first 5G network. Furthermore, South Korea is one of the few countries that is capable of building end-to-end 5G solutions and products. For example, Samsung Electronics is one of a few companies in the world that offers 5G solutions for chipsets, network core, radio solution and mobile devices.

Considering aforementioned Korea’s leadership in the global 5G landscape and Germany’s internationally well-known prowess in manufacturing, Fraunhofer Representative Office Korea is in the best position to promote collaboration between experts from the two countries. Since 5G and its application into Smart Factory incorporates broad areas of expertise involving complicated unsolved technical and business problems, having an “open innovation” approach is one of the keys to success.

Expanding Collaboration Opportunities at the Korean-German Conference

On October 2, Fraunhofer RO Korea hosted (Korean-German 5G & Industrie 4.0 Conference), co-organized by the Korean-German Chamber of Commerce and Industry (KGCCI) and the Embassy of Germany Seoul. The conference is also partnered with ’5G Forum’, which is a government-industry-research alliance in Korea that joined forces to take the global lead in 5G communication. This event was intended to provide exchange of knowledge as well as networking opportunities between experts from Korea and Germany.

Main topics of the conference were the status of the 5G technologies and possibilities for industrial application. Around 160 experts attended the conference and discussed how both countries could benefit from mutual collaborations.

After the welcome speech of Dr. Byungkwon Park, Representative of Fraunhofer Office Korea, and the H.E. Ambassador of Germany Stephan Auer, 5G Forum gave an overview of 5G technologies and policies in Korea. Dr. Ilgyu Kim from Electronics and Telecommunications Research Institute (ETRI) mentioned that Korea should already now start preparing for the future with 6G. Prof. Dr. Slawomir Staniczak from Fraunhofer Heinrich-Hertz-Institut (HHI), discussed Machine Learning concepts in-depth and shared his insights that Deep Learning should be applied to 5G.

After the first technical session, companies from Germany and Korea exchanged their ideas for 5G. One of the most notable domains of application is Smart Factory which integrates data processing into the complete production value chain. Companies such as KT, Siemens, Bosch, TÜV SÜD, Telstar-Hommel, LSSG, and Mercedes-Benz presented about their experiences with 5G. To conclude, Frank Burkhardt from Fraunhofer Fraunhofer Institute for Integrated Circuits (IIS) commented on the challenges and solutions of future wireless factories with 5G.

5G will remain a crucial topic for the transition of the industry in next years. The Fraunhofer RO Korea will thus continue its efforts to promote research and business collaboration between Korean and Germany.
KIREC Seoul 2019

Weith over 2,000 participants, 30 sessions and 22 side events, the eighth edition of the International Renewable Energy Conference (IREC) was held on October 22-25 in Seoul, Korea. At this international high-level policy event, leaders from across society were invited to meet and discuss policies and experiences in renewable energies. Inspired by the 2016 renewables conference in Bonn, each IREC involves representatives from business, governments, civil society, science and academia all whom participate in discussions and debates – with the objective of advancing the global energy transition to renewables. Called KIREC Seoul 2019 after the hosting country and city, the event was one of a kind – for the first time in the IRECs; a national and a local government were co-hosts.

Cities are taking the leading role in the renewable energy debate and KIREC Seoul 2019 demonstrated how multi-level integration can drive the energy transition.

The conference started on October 22 with a day full of side events. From climate to mobility and women empowerment, the day was an opportunity for organisations to highlight what they are doing to advance a more sustainable energy future. Twenty-two side events were hosted by various organisations, including UNECO, SLoCaT, the International Hydropower Association, the Green Climate Fund and the IEA.

Events covered topics ranging from the importance of enabling policy environments; accelerating investments, business, youth and citizen participation; and the benefits renewables provide for combating air pollution, facilitating access to energy, and creating sustainable cities. Two reports were launched over the course of the day. REN21 released its 2019 Asia and the Pacific Renewable Energy Status Report, which provides an overview of progress, trends and development of renewable energy uptake in 18 countries in the Asia-Pacific region. The IEA also presented its newly-released Renewables 2019 market analysis and forecast from 2019 to 2024 on renewable energy and technologies, with a specific focus on distributed solar PV and its huge growth potential.

The second day began with a full agenda. South Korea’s Trade, Industry and Energy Minister, Sung Yun-mo, kicked off the day’s activities with a rousing speech about the country’s efforts toward the energy transition, followed by remarks by Seoul Metropolitan Mayor Park Won-soon, and Arthouros Zervos, Chair of REN21. A high point of the day was former UN Secretary General Ban Ki-moon, Chair of Korea’s National Council on Climate and Air Quality and former UN Secretary General.

The third day’s high-level panel revolved around the central role of cities in the energy transition. It was another remarkable moment. “We were complimented on what we are doing to reach our own goals and people will participate. It’s not the time to fight each other,” said Ban Ki-moon. The speech made by Kim Do-hyun, a young climate activist from South Korea, demanding action on the energy transition, was another remarkable moment. He also called for dialogue, saying, “Political will is important and necessary. Only when politicians show strong will, can they achieve the goals and people will participate. It’s not the time to fight each other.”

In the afternoon, parallel sessions began. Divided into five tracks, the sessions formed the bulk of the conference programming on October 23-25. Each track tackled a particular theme regarding renewables; Policy and Market Design; Cities; Finance, Technology & Industrialisation; Innovation and Social Dimension. The third day’s high-level panel revolved around the central role of cities in the energy transition. The session brought together participants from the International Mayors Forum and KIREC Seoul 2019 to illustrate the natural linking of renewable energy and cities. Young Sun-woo, Korean Society for Atmospheric Environment, noted the difficulties in convincing the governments of the urgency of issues when they lack short-term outcomes. Rana Adib, Executive Secretary of REN21, concluded the session. “The renewable energy transition means decentralisation,” she said, noting cities are a central actor in the energy transition. “Citizen ownership is key and is at the centre of discussion. Citizens are actors but there are other drivers such as jobs or social inclusion and communication that are also key.”

The final session on Friday included remarks by South Korea’s Trade, Industry and Energy Minister Sung Yun-mo and the reading of the 2019 Conference Declaration, which expressed participants’ support for increasing renewables in the Republic of Korea to reduce air pollution and address health issues. The Declaration also noted the role of cities, citizen participation and policy frameworks in renewable energy uptake. Thierry Lepesq, an energy entrepreneur, author and founder of Soldavent, delivered an inspirational closing speech. Finally, Rana Adib, REN21 Executive Secretary, wrapped up KIREC Seoul 2019 with an energetic call for change. “The discussions we had are all aimed at changing the normal. We do not have one success to lose, and we need to work together for systemic change. This means making renewables not the conventional fuel of tomorrow, but of today.”
I n July 2019, the inauguration of the German Engineering Research and Development Center LSTM Busan Branch (LSTME BB) marked the official opening of the first and only, publicly funded foreign research institute in Korea. To promote the Korean economy and society, the South Korean Ministry of Trade Industry and Energy and Busan Metropolitan City asked the Director of the Institute of Fluid Mechanics Erlangen (German abbreviation: LSTM Erlangen) Professor Antonio Delgado to establish the twin institute LSTM Busan in the Busan Jinhae Free Economy Zone.

With the strong believe that up-to-date fluid mechanics is a part of cross-sectional technical discipline, the declared mission of LSTM Busan is to center all its research and development activities on humans and the satisfaction of their basic needs. Basically, there are four areas:

• food and nutrition
• pharmacy and medicine
• nature and clean environment
• green, sustainable and efficient energy systems

Thus, on the one hand the corresponding mission of LSTM BB matches to a large extend with the eight Millennium Development Goals of the United Nations, such as contributing to the eradication of hunger and ensuring environmental sustainability in face of the population explosion in Asia and Africa. On the other hand, the mission of LSTM includes providing scientific based technical solutions to common challenges in the German and Korean society such as aging of the population. Each member of the governing Scientific Steering Committee of LSTME BB, i.e. Prof. Antonio Delgado, Prof. Andreas Wierisch, Prof. Jovan Jovanovic, Prof. Cornelia Rath and Prof. Man-Gi Cho, has extensive, well-documented expertise at least in one of the four relevant areas mentioned above. The actions of the steering committee are supported by seven postdoctoral researchers from the fields of computational fluid dynamics, chemical reaction engineering, biotechnology, material science, pharmaceutics and medical physics as well as eight doctoral students and up to 20 research students working in these fields.

What challenges and opportunities are there in having a German institute operating in Korea?

Possibly the biggest challenge is that everything is unexplored territory. As mentioned before, this is the first time that a foreign research institute is publicly funded in Korea. Likewise, this is also very exciting as this gives us the opportunity to shape the future for multinational research cooperation in Korea. In some sense we are a test bed in how far truly international research is possible in Korea.

Industry 4.0 is a hot topic in Korea as well as in Germany. Do you have experience in this area?

For more than two decades, my German working groups have been contributing in the field of modeling, simulation, diagnosis, prognosis, and optimization with the help of numerical, data mining, cognitive and hybrid tools that nowadays are considered as essential columns of Artificial Intelligence, Big Data and Digitalization and, thus, of Industry 4.0. Presently, we are dealing with the implementation of IoT in production systems, digital twins, evolutionary optimization and reference petri nets for a resource and economical efficient complete production plants.

Where do you see the added value for Korea and Korean partners of LSTM Busan?

We consider Korea and Germany as natural partners, not only due to their shared history but also due to the possible synergies between their industries and research institutions. This might be even compounded by the current tensions between Japan and Korea. We believe that our unique situation, as a bridge between two countries and societies, makes us an attractive partner for bi-national 2+2 projects, connecting German and Korean industry and research institution through shared R&D projects. Also due to our multinational and distinct experience in Korea, we can facilitate knowledge transfer under special consideration of cultural differences and peculiarities.

Cooperation:

• green, sustainable and efficient energy systems
• innovation and clean environment
• pharmacy and medicine
• food and nutrition

Each research student working in these fields.

Our institute of Fluid Mechanics LSTM Erlangen is an academic unit of the Technical Faculty of the Friedrich-Alexander-Universität Erlangen-Nürnberg. Our team consists of more than 70 collaborators, who are organized in ten different activity areas. We are responsible for more than 1,000 bachelor and master students and offer more than 30 bachelor and master courses. In research, we are especially interested in laminar, turbulent, poly-phase and foam flow fields, in the aero- and hydrodynamics of transport and propulsion systems, in flowing matter of biological origin such as food, medicine, pharmacy and waste water, in thermo-fluid dynamics of chemically reacting matter including combustion and plasma treatment, in flow machines and wind converter as well as in coating processes. Our institute intensively devotes itself to acquiring third-party funding. In basic research, it has been contributing to national and European coordinated research programs such as several priority research programs, special collaborative research centers, German Research Foundation (DFG) Research Groups, DFG-AIF\(^1\) cluster projects and European Framework 7 projects. Furthermore, our institute has been awarded in numerous cases, subsidies from open competitive federal and regional calls such as IGF\(^2\), AIF, ZIM\(^3\) and Bavarian projects. Last but not least, the members of the Scientific Steering Committee have been engaging in more than 150 projects with Global Industrial Players and Small and Middle Size Enterprises.

How does the LSTME Busan plan to position itself in the Korean research landscape?

First and foremost, we want to act as a cooperation partner of universities, research institutes, SMEs and large industrial partners. Establishing fruitful partnerships with local partners in the Busan region must be a high priority of our institute, but also partners in other regions are highly welcome. We trust that the German engineering methods lead to synergic effects that can enrich Korean research and development processes. We consider creating new bridges between science and engineering as an essential part of our mission.

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1. AIF: German Federation of Industrial Research Associations 2. IGF: Industrial Collective Research 3. ZIM: Central Innovation Programme for SMEs
Nature of Intra-Group Services

Generally speaking, the intra-group services between related parties in a multinational enterprise (“MNE”) group are provided for the improvement of cost-efficiency and effectiveness of business activities of such groups. For example, as all the subsidiaries of a MNE group cannot hire their local lawyer for their legal issues in each jurisdiction from a cost-benefit perspective. Instead, the foreign headquarter can hire the in-house legal counsel to mitigate and manage the foreign legal exposures or issues of the group, which will be undertaken by the foreign headquarter if some requirements are met.

Basic Requirements for the Deductibility

Under the Korean International Tax Coordination Law (“ITCL”), the intra-group service fee paid to the foreign-related party can be deductible for Korean corporate income tax purpose when the following four conditions are met.

1. The relevant service agreement should be made in advance before the provision of services and the service provider actually perform such services under such agreement;
2. The service recipient should get the expectation on income generation or cost reduction from the provided services;
3. The service fee is determined at the arm’s length price; and
4. The service recipient should keep the evidence documents supporting the fulfillment of the conditions of (1) to (3) in the above.

1. Article 6-3 of Presidential Decree of ITCL

Comparison of Direct-charge Method and Indirect-charge Method

The services from a third-party service provider are essentially based on the direct-charge method. However, most of intra-group services are based on the in-direct charge method. Hence, it is of importance to compare both methods for understanding the potential exposures of the in-direct charge method.

Introduction of low Value-adding Intra-group Services under 2016 OECD TP Guideline

1. Definition of low value-adding intra-group services

Under the OECD TP Guideline, low value-adding intra-group services (i) are of a supportive nature, (ii) are not part of the core business of the MNE group, (iii) do not require the use of unique and valuable intangibles and do not lead to the creation of unique and valuable intangibles, and (iv) do not involve the assumption or control of substantial or significant risk by the service provider and do not give rise to the creation of significant risk for the service provider.

2. Simplified determination of arm’s length charges for low value-adding intra-group services

Basically, the simplified approach means that a tax administration allows its tax payers to reduce the compliance effort of meeting the benefits test and in demonstrating arm’s length charges for low-value-adding intra-group services as long as they comply with the obligation on documentation and reporting.

1. Benefits test: It should be verified that the activities by the service provider provides the service recipients expected to pay for the services with economic or commercial value to enhance or maintain the service recipients’ commercial position.
2. Arm’s length charges: The same mark-up of 5% shall be utilized for all low-value-adding intra-group services irrespective of the categories of services.}

Comparison of Direct-charge Method and Indirect-charge Method

<table>
<thead>
<tr>
<th>Check point</th>
<th>Direct-charge method</th>
<th>Indirect-charge method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic feature</td>
<td>One-to-one mapping between service fee and service</td>
<td>one-to-one mapping between service fee and service</td>
</tr>
<tr>
<td></td>
<td>deliverable is possible – the services performed and the</td>
<td>deliverable is possible – the services performed and the</td>
</tr>
<tr>
<td></td>
<td>basis for the payment are clearly identified.</td>
<td>basis for the payment are clearly identified.</td>
</tr>
<tr>
<td>Service deliverable</td>
<td>Clear – report, slide deck, manual, program, etc.</td>
<td>Unclear – email, conference call, meeting, stand-by, etc.</td>
</tr>
<tr>
<td>Benefits and relevancy</td>
<td>Strong – Contract and deliverable as evidence</td>
<td>Weak – Hard to find the evidence on income generation and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cost reduction</td>
</tr>
<tr>
<td>Documentation</td>
<td>Easy – Contract and deliverable can act as evidence</td>
<td>Difficult – Need to collect the evidences with separate</td>
</tr>
<tr>
<td>Korean tax authority’s position</td>
<td>Not challengeable (excluding arm’s length price)</td>
<td>Challengeable on the deductibility itself</td>
</tr>
</tbody>
</table>

Utilization of a professional service firm for the documentation, etc.

Utilization of the concept of low value-adding intra-group service fee in OECD TP Guideline

As low-value-adding intra-group services are of a supportive and administrative nature, they have been challenged as weak relevancy items in connection with the benefits test in the past tax audit practice in Korea. However, as the OECD TP Guideline allows the tax payer to reduce the compliance effort of meeting the benefits test, the Korean taxpayers may argue that the Korean tax authority must not any more trigger the weak relevancy issue on the service categories having a supportive and administrative nature.

Recommendations

Annual documentation on the service deliverables per service category

In addition to the documentation mentioned in the above paragraph, it is highly recommended that a Korean subsidiary having the intra-group service payments shall document the service deliverables showing the service benefits per service category on an annual basis. For example, if the legal global counsel charges some intra-group service fees to a Korean subsidiary annually, such subsidiary shall collect and keep group legal consultation materials such as global legal policy update, legal review points of a certain contract, email advice, meeting material, training material, etc. on an annual basis. They shall be good supporting evidences for the deductibility of intra-group service fee for every fiscal year.

Jin, Sung Soo

Tax Director of BDO Sungto-Ehyun LLC, International Tax and TP Specialist, KICPA

www.bdo.kr
North Korea’s political and economic system has, since the 1950s, been heavily influenced by China and the Soviet Union. The country has been isolated from the international community, relying on foreign aid and economic support from these two countries. However, under the Kim Jong-Un regime, there has been an observable shift towards self-reliance and import substitution. This approach has been driven by the need to diversify the economy and reduce dependence on foreign aid.

Recent trends of import substitution in North Korea’s light industry have been noted. The government has been encouraging the development and production of consumer goods, particularly in the light industry, to reduce the country’s import dependence. This shift has been partly due to the desire to become self-sufficient and reduce reliance on foreign aid.

In 2012, when Kim Jong Un came to power, he promised the people that there would be no more belt-tightening, a reference to the “arduous march,” a period of famine in the early 1990s. The new leader emphasized the need for a balanced development of military and economy, known as the “byungjin line.” This policy was further expanded to prioritize the development of the middle class, a group that is considered crucial for the stability and loyalty of the regime.

The government has implemented various initiatives to modernize the light industry, such as upgrading packaging and labeling of goods. For example, products such as bottles and cans now have improved quality and design, which is a significant change from the past. The government has also encouraged the development of domestic brands and the rehabilitation of existing industries, which has led to a significant increase in the domestic production of consumer goods.

Despite these efforts, the challenge of modernizing through import substitution remains. The lack of skilled labor, technology, and infrastructure continues to be a significant barrier. The government has attempted to address this by investing in education and training programs to develop a more skilled labor force. However, the success of these efforts will depend on the ability to attract and retain skilled workers, who are often drawn to the more lucrative opportunities in other countries.

Examples of the pitfalls of import substitution are abundant. When newly-independent states and those interested in catching up on advanced countries started their import substitution policies, they expected to see a secular decline in the relative price of primary commodities versus manufactured goods. They also expected to benefit from economies of scale and declining average costs. However, these expectations were not realized, as cost curves are not independent from competitive pressure, and inefficiencies in protected industries over decades prevented industries like the Brazilian car industry to become globally competitive.

The success of import substitution policies depends on the ability to create a competitive environment. This requires a combination of factors, including the availability of skilled labor, access to technology, and a market environment that encourages innovation and competition. Without these factors, the success of import substitution policies is doubtful.
Koryo, for example, not only offers air flights, a travel agency, and bus and taxi services, but also, in cooperation with a foodstuff factory, soft drinks and conserves, and in cooperation with a cigarette factory cigarettes sold at the airport. Goods of the Ryugyong company are even featured with their brand names in official propaganda by now.

The rise of domestic light industries, producing things so diverse as chocolates, cookies, greasing-flavored coffee or cola-style soft drinks, in some places led to an amazing disappearance of Chinese goods. Travelers from Pyongyang to Wonsan will know the more or less only resting area of Singyo: In 2015, a visitor there would find shelves full of Chinese and sometimes Southeast Asian snacks, and occasionally even a German or Russian chocolate. Today, 100% of goods are domestic. The same is true for certain hotel shops. In one place, all foreign goods are banned into an outside shop resembling the former East German “inter-shop”. Naturally, this description has to be seen with a number of caveats: first, it does apply in particular to shops highly visible to foreigners, as the aforementioned, but not necessarily popular with the domestic population shopping largely on markets. There, dominance of and preference for Chinese goods is still high. But even there, more Korean-produced goods made inroads. Second, while modern packaging and production are good, they are often based on foreign machinery, more often even imported labels and production itself is often dependent on raw materials from abroad. As long as no sales abroad are possible (partly due to sanctions, partly due to domestic restrictions), no lasting effect on competitiveness can be expected.

Due to the mixture of foreign and North Korean companies in the Rason Special Economic Zone at the border to China and Russia the case is not exactly comparable to the rest of the country, but can be an example for what could happen in the rest of the country. Among the important foreign investments (joint ventures) is a relatively large cement factory with a plant in Ingsang and a smaller one between Sonbong and Rajin, providing much of the building materials for the current building boom. Other joint ventures existed in particular in seafood industries, a bakery and textile and shoe companies. However, because of the current restrictions on joint ventures due to UN sanctions, it is not really clear what the status of these JV companies is. It might well be that many of them just nominally stopped to be JV companies. Some seem to have changed their name. Besides the JV companies, since Kim Jong-Un took power, also attempts for local diversification of production started. One of the first such attempts was the so-called “Czech brewery”. For a moderate sum (but certainly quite considerable for Rason) of 60.000 Euro, a mini-brewery was installed in the Seaside park and a Czech brewing engineer for half a year taught local staff how to brew different kinds of beer. Beer is certainly a very good starting point for local production, since demand is always there. However, in this case the price of the product (initially around 9 RMB) compared unfavorable with Chinese imports and other North Korean beers and business was not brisk. It remains a place where mainly foreigners can be found.

Currently, a new scheme to build a much larger brewery, the “Haesian” (Seaside) brewery, on the slopes of the mountain leading to Pipa Island, is underway, but has been stalled for the last three years is stalled, maybe due to sanctions. It seems to be another of the stalled JV companies. However, at the same side now a very modern ramyon (noodle) factory operates, which produces with imported machines and obviously mainly imported ingredients (wheat from China and Russia, sugar from Thailand, oil from China etc.) and with very attractive packaging, which could stand competition with any product on the Chinese and South Korean market. During a visit to the company, company officials maintained it was a pure North Korean investment, but looking for foreign investors. The production fits well into the current wave of new products: modern design, catering for a new kind of customer (among others those eating alone rather than the traditional family meal, for whatever reason) and potentially even fit for export. While currently at least the largest part of raw materials comes from abroad, there is one encouraging cooperation emerging: just opposite of the factory, maybe a kilometer below the Satyangsan, a small potato starch factory exists, and according to the officials of Rason, is delivering a part of its output to the noodle factory. This kind of local cooperation has potentially a great future for local production and later export. Currently, with most raw materials imported, it is difficult to see how the factory can make profit, but with exports, this might change. Even now, importing raw materials and producing in Rason might be much cheaper than importing final products.

Until now, it was often the other way round: Chinese companies brought out raw materials, in particular seasonings, and value adding activities were carried out in nearby Yanbian province, e.g. drying pollack (lmpingtal), which was then re-imported for higher prices than the original fresh pollack). Rason shows that the emergence of local industries might contribute to economic rehabilitation. In cooperation with foreign companies – often small and medium companies from nearby Yanbian – a realistic economic rehabilitation of the regional economy seems possible. In this sense, Rason might indeed fulfill the originally intended function of becoming a trial area for new forms of cooperation. Ultimately, the North Korean leaders have to recognize that without market forces even well-meant reforms, or the financing of huge, modern production structures, are not enough to guarantee the modernization of factories. Only competition can do that miracle. And this is a difficult and painful way to go. And North Korea’s industries just started with timid first steps.
November 9, 1989 marked an end and a beginning: the opening of the Berlin Wall, the conclusion of the Cold War and the reunification of Germany. The challenge of reintegrating the two halves of the country has proved enormous, and there has been no shortage of criticism when things have gone wrong. Nonetheless, Germany’s political and economic reunification has largely been a success - in the past 15 years alone, the GDP of the former east has risen by more than 44% to 356 billion EUR.

Christian Hirte, the government’s commissioner for the ‘new federal states,’ says that eastern Germans should be proud. “Today the eastern German states have an economic power comparable to many regions in France or Britain,” Hirte explains. “If we remember where we started thirty years ago, the development has been impressive.”

The blossoming landscapes promised by Chancellor Helmut Kohl back in 1989 90 may have taken time to put down roots and grow, but grow they have. Each of the six federal eastern states—Mecklenburg Vorpommern, Thuringia, Saxony, Saxony Anhalt, Brandenburg and, of course, Berlin—have developed in different ways.

Berlin
Burgeoning Biotech
The capital of reunified Germany may be famous for its IT and other start-ups, but the Berlin business ecosystem is by no means restricted to bearded hipsters hacking away at laptops in cafés.

Case in point: JPT Peptide Technologies. This biotech company has become a market leader in its sector, employing some 100 people. Peptides are critical reagents to diagnose diseases such as cancer or infectious diseases and to develop effective, ideally personalized treatments targeting the immune system of patients.

The company attributes part of its success to its location on the Adlershof Campus in eastern Berlin, which is run by the Humboldt University, also in the east. “This location has numerous advantages, beginning with the support we’ve received over the years from the campus management and the possibilities for cooperating with other biotech companies,” says JPT managing director Holger Wenschuh, who was himself born and bred in East Germany.

Brandenburg
Reving Up with Rolls
When you hear the words Rolls-Royce, you probably don’t immediately think of Brandenburg. But the small village of Dahlewitz in the eastern German state is the spot where the famous British technology heavyweight chose to locate the headquarters of its German airplane engine subsidiary.

The company was able to build on existing expertise when it established the site in 1991. Close to 3,000 people work there. Mirko Quednau, for instance, cut his teeth with the East German state airline Interflug. Today he’s team leader of the training division in Dahlewitz. “We now hire apprentices who were born between 2000 and 2002,” he says. “It’s fascinating to work with people who only know the Wall from history books.” Quednau cites the presence of well qualified and keen people, universities, a very supportive regional government, the airport and autobahn connections as factors making Brandenburg a high power business location.

Mecklenburg Vorpommern
Nautical by Nature
Mecklenburg Vorpommern has not only the largest inland lake in Germany but also the longest (1,905 km) coastline. So it’s not surprising that many companies there have connections to the sea. A good example is Liebherr MCCtec GmbH, which manufactures a large variety of maritime cranes with a lifting capacity of up to 5,000 tons.

The foundation stone for the Liebherr location in Rostock was laid in 2002 and production began only three years later. Since then, the location has grown steadily and commands a market share of more
than 50% in some areas of the maritime industry. "The decisive advantage is the connection to the sea and its logistical possibilities," says Lübecke Rostock’s managing director of finance, Steffen Pohl.

"Here our cranes can be transported directly by ship to any part of the world," Pohl is obviously proud of his region, adding that "other people come to Mecklenburg-Vorpommern for holidays – I live and work here."

**Saxony**

An Inventive Family Business

Not many firms in the world can claim to be unique, but Von Ardenne from the Saxony capital Dresden is one of them. The company, which specializes in vacuum coating for the glass, photovoltaic and energy industries, takes its name from one of Germany’s leading twentieth-century inventors, Manfred von Ardenne (1907–1997).

Von Ardenne’s business was one of the few private enterprises allowed in the Communist east, where, with no recourse to government subsidies, it learned to survive in a hostile business environment. After the demise of German socialism thirty years ago, Von Ardenne flourished. COO Pia von Ardenne Lichtenberg, Manfred’s granddaughter, says the company’s success would have been impossible elsewhere.

"We employ physicists and engineers who grew up and were educated in Saxony," she says. "There are many research institutions and universities here. We couldn’t imagine advancing our technology anywhere else in the world."

Today Von Ardenne turns over around 280 million EUR a year and employs around 1,000 people in Dresden and across its five subsidiaries worldwide.

**Saxony Anhalt**

Software Solutions from a Small City

Businesses in eastern Germany tend to be smaller than in the west, which can be an advantage to ambitious start-ups. Take COMAN Software, which was founded in 2018 in the town of Stendal, Saxony-Anhalt. It provides a software solution for monitoring and digitalizing construction projects in automotive plant engineering, making them more efficient.

COMAN already counts some of the world’s largest carmakers among its customers, and the company is well on its way to becoming the market leader. Its impressive start attracted 1.2 million EUR of venture capital from the federal state of Saxony-Anhalt.

That funding allowed COMAN founder and Saxony-Anhalt native Sven Kägebein (right) to return home and expand his business in the tranquil surroundings of Stendal. The company already has 14 employees and continues to grow. Kägebein’s partner Timur Rike (left) comes from West Berlin, but together, the two entrepreneurs have their sights firmly set on the prospects of the future and not the divisions of the past. "I look forward to the day when people no longer talk about East and West, but just about Germany," Kägebein says.

**Thuringia**

Uniting Past and Present

There is a stereotypical account of reunification that relates how western Germans invaded the east, shutting down businesses and ordering easterners around. But Thuringia provides a great example of cooperation and building on traditional eastern strengths.

For nearly thirty years the Fraunhofer Society, headquartered in Munich, has worked with companies like optics giant ZEISS in eastern German Jena. "The Fraunhofer Society looked around early on in eastern Germany for places with an applied research potential that could benefit businesses," says Fraunhofer Institute for Applied Optics and Precision Engineering IOF Director Andreas Tünnermann. "One was Jena with its special emphasis on optics and photonics based on the area’s traditional industrial strength in those areas. We started in 1992. Our beginnings were humble - with only a few employees and a budget of the equivalent 2 million EUR a year. Today we have 300 employees and a budget of around 45 million EUR."

At present some 180 companies in Jena operate in this sector and employ 15,000 people, mostly university graduates, making it a shining example of the economic potential in Germany’s east.

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Elisabeth Guth

GTAI expert for East Germany

This article was published in GTAI’s MARKETS Germany publication 3/2019.

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The Academia of Ausbildung
The important Role of Colleges for Ausbildung

How colleges take an important role for Ausbildung.

The quality of Ausbildung, the Dual Vocational Training System in Germany, highly depends on two factors: the trainers in the companies and the teachers in the so-called ‘Berufsschule’, the vocational schools that provide the academical education for the trainees during their Ausbildung period. Considering that trainees are spending one third of their training period at these schools, where they learn not only technical skills but also social competencies and soft skills the impact of the vocational schools on the trainees is immense.

The Vocational School in the Dual Vocational Training System in Germany

Vocation schools serve as a dual partner to the training company in the Ausbildung system. Its task is to impart mainly theoretical general and vocational courses contents taking into account the operational requirements. It is a “part-time school” which scope extends to about one to two days per week. Alternatively, block lessons are also possible. The young trainees undergoing the Ausbildung training - and those who have completed their compulsory education but are unemployed - are subject to compulsory vocational training. Today, vocational schools strive to impart knowledge and skills that go beyond the actual job-specific requirements. The aim is to work with the students in addition to the expertise and certain core competencies, such as social skills, in order to give them some flexibility for their future professional life.

The main subjects at vocational schools are divided into three parts:
- General education (sports, German, social studies etc.)
- Practical instruction (laboratory exercises or similar)
- Occupational theory classes (accounting, technical signs, etc.)

One can differentiate the vocational schools with regard to their fields of study. Thus, there are commercial, technical, commercial, domestic, social care, agricultural, horticultural and mining vocational schools. Another classification is possible according to elementary and specialized level. The basic level usually includes the first year of vocational education. It conveys mainly basic knowledge, while the specialized level that builds on it penetrates much more into the corresponding professional specifics. The cooperation between company and vocational school nowadays takes place in a multitude of different ways. For example, vocational school teachers complete various internships in companies and vice versa. The following list takes a look at the tasks for the training staff in more detail:
- Mediation of occupational theory, professional practice and general education as well as values and behavior
- Diverse tasks within and beyond education (socialization, supervision, coordination, promotion, administration, motivation)
- Trainers and teachers complement each other in vocational training

Donation ceremony at Yeungnam University College

Donation of Audi Volkswagen Korea training cars

The Vocational School in Ausbildung in Korea

With Ausbildung in Korea now successfully being around for the third year, we are very happy to rely on a solid cooperation with three colleges in Korea which take over the tasks of the academic education of the trainees – so to speak the Korean version of Berufsschule: Doosan Technical University, Yeju Institute of Technology and Yeungnam University College.

As Ausbildung is only as good as their players, the colleges take over a very important role in the system of Ausbildung here in Korea. Therefore, the selection process was highly selective and strict.

When we first started Ausbildung here in Korea, one core question was: who can take over the academic education of the trainees? It was clear that this constitutes another core pillar of Ausbildung next to the trainers in order to create a high-quality training program here in Korea.

Looking into various possibilities for partners to fill in the role, the decision was made for the above-mentioned colleges, considering the following criteria:
- Motivation to participate
- Willingness to invest money, time and capacity
- Independence
- Flexibility

Other than in Germany, colleges in Korea are not supported by the government for taking part in Ausbildung. The three participating colleges are investing their own time, money and capacities in order to be a strong partner for Ausbildung. This effort is highly appreciated by all players in Ausbildung as without this, it would not be possible to establish Ausbildung as a new and sustainable career path for Korean youth.

Donation ceremony at Yeoju Institute of Technology

Donation ceremony at Yeungnam University College

Donation ceremony at Doowon Technical University

Donation of Audi Volkswagen Korea training cars

Ausbildung introduction event at Doowon Technical University

Ausbildung introduction event at Yeoju Institute of Technology
Vice President, KGCCI
Head of Berufsbildung, KGCCI DEinternational Ltd.
www.kgcci.com

Susanne Woehrle
Vice President, KGCCI
Head of Berufsbildung, KGCCI DEinternational Ltd.
www.kgcci.com

Automobile Department of Yeungnam University College

donation of an Audi A5 and A7 to Yeoju Institute of Technology and Yeungnam University College on October 24 and 25, 2019. With now the latest models of this brand on site, colleges can train very specifically and therefore keep the quality of Ausbildung here in Korea on a high level.

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Asiamoney, 2018
Best Domestic Bank in Korea
Davos Forum, 2018
No.46 on World’s Most Sustainable Companies Ranking
The Banker, 2018
7 Consecutive year selected as Top 100 in the World
KGCCI has been annually publishing the CSR Report of German companies in Korea since 2015. This report features examples of CSR activities of German companies in Korea and the manifold ways they engage with the Korean society. This report is a great way to document the contributions of German companies for the Korean society and a tool to learn about other companies’ CSR practices. The KGCCI CSR report is being sent to Korean media outlets and important stakeholders in the CSR field (government agencies, National Assembly Members, etc.). In order to promote our members’ CSR activities further to the Korean-German business community and related interest groups, their CSR projects are also presented in the KORUM magazine.

If you would like to introduce your company’s CSR activities in the next KGCCI CSR Report or in the KORUM Inspiring CSR section, please contact pr@kgcci.com

CSR Activities of Bayer Korea

Bayer is a global enterprise with core competencies in the life science fields of health care and nutrition. Bayer Korea is actively performing volunteer activities in Seoul Gwanak Senior Welfare Service Center since 2012. In this regard, Bayer Korea has hosted ‘Bayer Health Day’, offering free health checkups, and lunch services to seniors in the community who live alone. Bayer Korea also has hosted Kim Jang event for the past 8 years on every winter. Kimchi made by Bayer employees has been provided to 300 underprivileged seniors living alone for their warmer-hearted winter. Bayer Korea also has started ‘A Great Cheer for Youth’ campaign to encourage 20s-30s young generation to revive hope and motivation since 2017 through social media and offline. The talk show event was held with young leaders’ speech to communicate about adventures in their lives and also more in-depth self-discovery session was provided to encourage youths to find their own way of lives.

SAP Korea Powers Opportunity by Building Digital Skills

Due to rapid innovations in technology, the competencies people need to succeed in today’s digital world are changing. SAP Korea tackles this challenge by powering opportunity for all people through initiatives for digital inclusion. In July 2019, SAP Labs employees served as teachers at the 2019 Summer Coding Camp for elementary students at the Chuncheon Social Welfare Center. Through fun, interactive activities with SAP Labs teachers, children felt with their hands the concept of coding and experimented with smart technologies. When asked about their favorite activity one student said, “I liked playing with IoT because I can command machines to do things for me more easily.” The camp sparked the children’s creativity and curiosity for the endless possibilities in technology. By helping people build digital skills, SAP Korea is helping everyone to participate and to benefit in today’s digital world.

Audi Volkswagen Korea’s TOMOROAD School

The TOMOROAD School is Audi Volkswagen Korea’s flagship CSR program. It is a program developed to leverage the free semester system at middle schools in Korea, which was introduced to help the students to develop their aptitudes through experiential learning activities. Through self-developed 8 or 16-week curriculum, Audi Volkswagen Korea offers the students a chance to have a hands-on experience on coding and experience the changes that will be brought by the leading automotive sector in the daily lives. Based on the needs of schools, the curriculum can be tailored to younger students in the form of a half-day or 2-hour program. Until now, a total of 2,400 students have participated in the program nationwide. Recently, the TOMOROAD School won an award from the Ministry of Culture, Sports and Tourism and Audi Volkswagen Korea was certified by the Ministry of Education as the superior institute for donating education programs to students. Audi Volkswagen Korea will continue to work closely with its NPO partner, the Korea Social Investment, to further expand the program to nationwide.

Company Profile

Established in Germany 1972
Start of Business in Korea 1995
Number of Employees in Korea
SAP Korea : 520
SAP Labs Korea : 230
Line of Business Enterprise Application Software
Website www.sap.com/korea

Company Profile

Established in Germany 1863
Start of Business in Korea 1955
Number of Employees in Korea
SAP Korea : 520
SAP Labs Korea : 230
Line of Business Enterprise Application Software
Website www.sap.com/korea

Company Profile

Established in Germany 1909
Start of Business in Korea 2004
Number of Employees in Korea
186
Website www.avknewsroom.com

Company Profile

Established in Germany 1863
Start of Business in Korea 1909
Number of Employees in Korea
186
Website www.avknewsroom.com

Inspiring CSR

Inspiring CSR

KGCCI Member’s Spotlight

KORUM  |  4th Quarter 2019

40 | KORUM  |  4th Quarter 2019

41 | KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

41 | KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

KORUM  |  4th Quarter 2019

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Please introduce your company’s business.

Bitsensing, expert for the RADAR technology, aims to shape and redefine the way safety is managed on the road and we are developing RADAR solutions to perform better safety.

How do you define innovation?

Innovation means overcoming limitations with the existing solutions while providing measurable values.

Please explain the product that you received the KGCCI Innovation Award for.

The 4D Imaging RADAR is a sensor that can replace the current LiDAR sensor. It is a B2B based product which will be used as a key component by self-driving car manufacturers all over the world.

What was your motivation for applying for the KGCCI Innovation Awards?

Our goal of delivering better safety cannot be achieved solely relying on the technology but brand awareness. The KGCCI Innovation Awards provided us with the great opportunity to expose Bitsensing to the public.

What future plans does your company have?

Since it takes some time for 4D Imaging RADAR to be fully developed, we plan to establish RADAR infrastructure on the road using our 24GHz Traffic RADAR first. The Traffic RADAR will change the way the traffic communication is managed between the vehicles and between the cities, which will establish the foundation for smart city and infrastructure for autonomous vehicles.

KGCCI Innovation Awards 2019 - Innovation in Business

24GHz Trafficradar

KGCCI Innovation Awards 2019 - Innovation in Business

Mr. Markus Fickelscher has been appointed as Chief Financial Officer of Mercedes-Benz Financial Services Korea Ltd, effective from November 1, 2019. He has been working in the Daimler Group since 2006 with various positions in the area of finance in Singapore, Germany, Greece and Turkey.

Mr. Felix Busch has joined Millennium Hilton Seoul as General Manager since August 5, 2019. He played a significant leadership role in the Hilton group for more than 16 years, having worked at Hilton properties in Europe, the UK and Australia and most recently in Japan. As General Manager at Hilton Nagoya, Mr. Busch was responsible for the timely and well-executed completion of the masterplan for rooms, heart of the house revamp and the food & beverage masterplan as well as the renovation of the lobby and reception area, in time for the 30th anniversary of the hotel.

Mr. Michael Leibl has been appointed as the new Director of Operations at Millennium Hilton Seoul. He joined the hotel from Hilton’s regional office supporting new opening hotels. He also worked at Hilton Tokyo Odaiba, where he orchestrated the conversion from a local brand to a Hilton-managed hotel as Director of Operations. Mr. Leibl has multiple international work experience including positions in Singapore, China, and the UK, where he worked as an Executive chef and moved his way up to being in charge of the whole hotel operations.

Mr. Sun Jin Lee assumed his position as General Manager/Director Delivery of Mackevision Korea Co., Ltd on September 1, 2019. Mackevision is one of the world’s leading providers of data-based visualization and Computer-Generated-Imagery (CGI) solutions. Prior to joining the Mackevision team, Mr. Sun Jin Lee had been working with Weta digital (New Zealand) & Sony image works [USA] being involved in various films for visual effects. As the new General Manager of Mackevision Korea he is charge for business development and will lead the organization in Korea.
On October 17, KGCCI signed an MoU with the Federation of Middle Market Enterprises of Korea (FOMEK) to foster the development and exchange between Korean and German mid-sized companies. With this MoU, that was signed by KGCCI’s Korean Chairman Dr. Hyo-Joon Kim and FOMEK’s Executive Vice Chairman, Wonick Bahn, both parties agree to establish a close cooperation system to foster prestigious-longevity enterprises by expanding opportunities of bilateral business exchange through delegation trips or market entry support. Furthermore, projects to foster industrial manpower including the German dual vocational training ‘Ausbildung’ will be promoted by FOMEK together with KGCCI.

ITB Asia

The ITB Asia 2019, a three-day B2B trade show and convention for the travel industry, took place for the 12th time in Singapore on October 16-18. The ITB Asia 2019 is the premier meeting place for the travel industry and a forum to establish high-quality customer contacts and to conduct business - similar to its parent event ITB Berlin. At the ITB Asia international exhibitors of all sectors in the travel industry meet with top international buyers from MICE, leisure and corporate travel markets. KGCCI DEinternational, being the official and exclusive representation of Messe Berlin in Korea, provided full support to the visitors and exhibitors on site.

Contact person
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Dialog Spielwarenmesse

On October 22, KGCCI organized a presentation and networking event for the Nuremberg International Toy Fair “Spielwarenmesse 2020” at the Grand Hyatt Hotel in Seoul. Around 40 guests from professional magazines and media outlets attended the event to network and to obtain further information regarding the upcoming Toy Fair which will be held from January 29 to February 2, 2020. During the past 70 years, the Nuremberg International Toy Fair in Germany became the industry-leading fair presenting the latest trends with a Korean Pavilion, an average of 50 Korean exhibitors and around 600 trade visitors from Korea. Last year, over 2800 exhibitors and more than 65,000 visitors participated at the Nuremberg International Toy Fair.

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The 6th Cosmetics & Beauty Expo Osong Korea was held at the Osong KTX Station in the Chungcheongbuk-do Province on October 22-26. In cooperation with the fair organizer Osong Bio Promotion Foundation, KGCCI has been managing the participation of German exhibitors and supporting German buyers since 2017 to foster business relations among German and Korean companies in the beauty and cosmetic industry. This year, KGCCI organized a German Pavilion with six German cosmetics manufacturers and distributors. Additionally, five German buyers from four different companies participated in around 30 pre-matched meetings aside from individual booth visits.

Contact person
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On November 19, KGCCI attended the event for foreign trade “Außenwirtschaftsforum 2019” organized by the German Chamber of Commerce and Industry in Reutlingen (IHK Reutlingen). At this event, various panel discussions were conducted that were dedicated to the regions Asia, Africa and North America. Ms. Barbara Zollmann, President & CEO of KGCCI, participated in the panel discussion on Asia’s market together with representatives from the AHK Japan, AHK Philippinen and AHK Vietnam. The 55 participants could share further information on international market entry and expansion opportunities during the following networking session.

Trade & Connect
IHK München & Oberbayern organized the “Trade & Connect” event on November 22 with experts participating from various German Chambers of Commerce Abroad (AHKs) to share exclusive insights on market opportunities all around the world. Ms. Hae-Kyung Choi, Senior Manager of Market Entry & Expansion of KGCCI, conducted individual consultancy meetings with German companies interested in Korea. KGCCI will continuously strive to be the first contact point for Korean-German business and provide diverse services for the successful market entry to Korea.
Inside KGCCI

**Fairs & Exhibitions**

**KGCCI in Germany**

**Trade Promotion**

**KGCCI Events & Seminars**

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**2nd Korean-German Energy Day**

In October 24, KGCCI and Adelphi jointly organized the second “Korean German Energy Day” in Seoul on the topic of “System integration of renewable energies and Smart Grids”. The event was hosted by the German Federal Ministry of Economics and Energy (BMWi) and supported by the Korean Ministry of Trade, Industry and Energy (MOTIE). The event was held parallel to the international energy conference KIREC Seoul 2019.

The event with over 100 participants was led by insights into the political dimension of the energy transition in both countries through keynote speeches by Mr. Jeong-Il Kim, Director General at the South Korean Ministry of Trade, Industry and Energy (MOTIE), and Mr. Thorsten Herdan, Director General for Energy Policy at the German Federal Ministry for Economic Affairs and Energy (BMWi). Following, sessions detailing the technological side of the energy transition with experts from both countries showed various areas of application and existing challenges in the field of renewable energies regarding system integration and Smart Grids. In addition, a lively moderated discussion as well as Q&A sessions gave participants the chance to engage in a dialogue about the gained insight as well as possible future areas of cooperation. To conclude the event, a networking dinner provided further opportunity to deepen the bilateral exchange between both countries.

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**6th Energy Fireplace Talk**

KGCCI and adelphi organized a Fireplace Talk on behalf of the German Federal Ministry of Economic Affairs and Energy discussing the topic “Long-term Energy Strategies - Opportunities and Challenges for Phasing out Coal and Phasing in Renewables”. The event held on October 31 at the Conrad Hotel in Seoul started with a luncheon discussion that provided experts the opportunity to exchange ideas and thoughts for long-term strategies for a successful energy transition in Korea and Germany. During the event, measures towards a coal phase-out path and the challenges from phasing in renewable energy for alternative power generation in both countries were highlighted. In a concluding discussion, participants were able to address the topics of the presentations in-depth through a lively exchange.

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**KGCCI Business Trip on Biogas and Biofuels**

In November 25-28, KGCCI and the German Asia-Pacific Business Association (OAV) organized a Business Trip to Korea on the subject of biogas and biofuels as part of the Energy Export Initiative of the German Federal Ministry of Economics and Energy (BMWi). On November 24, four German companies in the field of biogas had the opportunity to present their products and technological solutions to the Korean audience at an expert conference. For the following days, KGCCI organized several 1:1 business talks with potential Korean business partners and relevant decision makers for the participating German companies.

Contact person for energy projects at KGCCI
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Hessen Delegation Information Trip to Korea

KGCCI organized an information trip to Korea for a delegation consisting of energy, transportation and smart city experts from Hessen, Germany, on November 3-5. The delegation was attended by 15 business and research experts, represented by Jens Deitscheidt, Secretary at the Hessen State Ministry of Economics, Energy, Transport and Housing. The delegation visited the Korea Energy Agency, the Seoul Transport Operation & Information Service (TOPIS), the Seoul Metropolitan Government and Hyundai-Kia Automotive Technology Institute in Namyang, Hwasung. The participants gained information about the energy industry status, renewable energy policies, autonomous driving system in Korea as well as Seoul’s high-tech public transportation system and plans for smart city.

DCCI Business Delegation Trip to Germany

On November 17-22, KGCCI and the Dasuq Chamber of Commerce and Industry (DCCI) conducted a delegation trip to Germany focusing on “Hidden Champions in the industrial sectors parts, materials and machines”. The delegation consisted of 17 representatives from regional automotive and machine parts companies, as well as from the Dasuq Gyeongbuk Machinery Cooperative, Dasuq Mechatronics & Materials Institute, Dasuq Metropolitan City Government and DCCI. The delegation visited German companies and German research institutes to network and to expand their knowledge about Germany’s leading products and its latest technology. The delegation trip aimed to strengthen bilateral business relations in the industrial sector of parts, materials and machines especially due to the trade dispute with Japan.

Investment Promotion for Iksan Parts & Materials Industry Complex

Upon the request of the Iksan Parts & Materials Industry Complex, KGCCI organized individual visits for consultation with German enterprises that are interested in the Korean market within the framework of the “SPS IPC Drives Nuremberg” exhibition, on November 26-29. Due to the recent trade conflict between Korea and Japan, the Korean government is eager to seek alternative business partners for the entire industrial sector including semiconductor, components and materials, to establish new cooperation and ensure economic stability.

Busan-Jinhae Free Economic Zone’s Delegation Trip to Germany

On November 28-29, Mr. Seung-Cheol Ha, Commissioner of the Busan-Jinhae Free Economic Zone (FEZ) and other public officials traveled together with KGCCI to Nordrhein-Westfalia and Hessen in Germany to consult with leading German enterprises with interest in the Korean market. The delegation discussed about the current market situation and the FEZ’s incentives for foreign direct investors. This delegation trip reflects the Korean government’s efforts seeking alternative business partners especially for the industrial sectors that are affected by the recent trade tensions.
Inside KGCCI

Start-up! Germany 2019

The DIHK, IHKs and AHKs co-organized the “Start-up! Germany 2019” with 60 startups from 20 countries. The event took place on October 27-31 at the IHK Duesseldorf in Germany. The startups visited leading industrial cities in North-Rhine-Westphalia and participated in Q&A and pitching sessions with major German companies, associations and investors. The Korean startup companies AKA Intelligence, BECTOKOREA, BOMAPP, and 42Maru participated in the event through KGCCI and the Korea International Trade Association (KITA). BOMAPP, selected as one of the 6 global startups, had managed to present its business model and its innovations to stakeholders until the semi-finals of the pitching competition.

Global Innovator Festa

On November 1, Daegu Metropolitan City hosted the “Global Innovator Festa” in Daegu City, Korea. Startups from all over the world had the opportunity to share their innovative products and business ideas. Felix Kalkowsky, Vice President of KGCCI DEInternational and Head of the Market Entry Department, presented an overview of the startup ecosystem in Germany. Delegates from Austria, Belgium, Denmark, Catalonia, China, Luxembourg, Poland, Sweden, the U.S. and the Korea Institute of Startup & Entrepreneurship Development (KISED) also shared startup related initiatives from their countries. Additionally, the conference participants were able to meet with Lee Seung Ho, Vice Mayor of Daegu, and his colleagues to learn more about the city’s latest initiatives such as Suseong Alpha City.

WIR Talk #3

On October 22, mentors and mentees of KGCCI’s WIR Group came together at Spaces Gran Seoul for the WIR Talk #3. The third WIR Talk was held by Christina Ahn and Tony Kang from Stanton Chase Korea, this year’s WIR Talks sponsor, and Michael Sanger from Hogan Assessments. The WIR mentors had the chance to assess their key strengths and areas for development through an online assessment survey using the Hogan Personality Inventory. During the event, the participating mentees obtained their individual summary reports of their strengths and a detailed explanation.

Gender & Power Talks #1

NP Paribas, Shin & Kim and KGCCI jointly held the “Gender & Power Talks 1” at the Shin & Kim office in Seoul. This event conducted on November 6 marked the start of a series of events that aims to promote dialogue on gender equality and bring together ideas to create an equal work environment. During the panel discussions that were divided in English and Korean sessions, industry leaders and professionals from various industries shared their experiences and thoughts on the topic of gender equality. Around 80 participants attended the first Gender & Power Talks.
**Intercultural Seminar with Workin**

KGCCI conducted a seminar on the topic "Smart Working with Germans" in collaboration with Workin on October 16. The seminar focused on the German understanding of the term “work” and participants exchanged their views on important values in the work process. In particular, they discussed how to work well and effectively with Germans.

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**KGCCI HR Circle**

In October 31, KGCCI held the HR Circle focusing on the topic “HRD Strategy for Talent Retention”. 17 HR professionals of member companies from various industries attended the event. The ‘HR Circle’ is a networking event exclusive for HR Managers of KGCCI’s member companies to discuss HR related issues such as recruitment, retention, trainings and labor relations with focus on the Korean labor market.

**Remuneration Survey Review Seminar with Korn Ferry Hay Group**

On November 7, KGCCI together with Korn Ferry Hay Group organized the review seminar inviting participants of the 2019 KGCCI – Korn Ferry Hay Group Salary Survey. 11 HR managers from 10 member companies of various industries participated in this seminar and received a remuneration & benefit reports as well as insights of HR trends for 2020. This Salary Survey is conducted annually and the next Salary Survey is planned to be announced on July 2020. Contact us for more information at secho@kgcci.com

**Communication Seminar with Vectis**

In cooperation with Vectis, KGCCI held the “Improving Information Flow between Foreign managers and Korean employees: Module 2” seminar on November 7. This seminar targeting Korean employees working in foreign companies focused on effective business communication and explained the need and requirements for steady flow of information, ideas and feedback from employees and further outlined leadership styles of foreign managers. Participants discuss several practical methods to express their thoughts and ideas clearly and confidently in order to work more effectively and gain the trust of their foreign managers.
In November 29, the traditional KGCCI Goose Dinner took place at the Grand Hyatt Hotel in Seoul. 150 guests celebrated the pre-Christmas season while enjoying a festive dinner with roasted goose, a music performance and a charity raffle. Many companies donated various items for the charity raffle of which the proceeds reached 8,780,000 KRW. This year’s proceeds will be donated to the “Aisori Ensemble”, a cochlear implanted deaf children’s choir founded by Paradise Welfare Foundation. We thank the platinum table sponsors Incheon Free Economic Zone (IFEZ), Porsche Korea Ltd., Shinhan Bank and Shin & Kim for their sponsorship and all companies which have contributed gifts for the charity raffle. We wish you all a Merry Christmas!
**KGCCI Sundowner**

On October 31, we welcomed new and old friends to the KGCCI Sundowner with special Halloween decoration. Our guests enjoyed the relaxing and pleasant atmosphere with German traditional food and beer provided by Blumentz. You can stay up-to-date about upcoming KGCCI events through our official website or weekly e-newsletter. Sign up on our website and follow us on Facebook and LinkedIn for the latest information and photos of the KGCCI.

**Skat Tournament**

The KGCCI Fall Skat Tournament 2019 was hosted at the Oak Room of the Millennium Hilton Hotel on October 26. Mr. René Wittenberg won the tournament which has a long-standing tradition, as it already started in 1973 in Korea. This year, 24 players attended the event including 10 participants from abroad.

On October 31, we welcomed new and old friends to the KGCCI Sundowner with special Halloween decoration. Our guests enjoyed the relaxing and pleasant atmosphere with German traditional food and beer provided by Blumentz. You can stay up-to-date about upcoming KGCCI events through our official website or weekly e-newsletter. Sign up on our website and follow us on Facebook and LinkedIn for the latest information and photos of the KGCCI.

Get a Head Start in Korea!

**KGCCI German Office**

Make Your Business Feel at Home Abroad

The German Office in the premises of KGCCI is the perfect environment for your first steps in Korea:

- Central location and easy access to important business districts
- German lease contract
- Support from our multilingual Korea experts

Contact: Hee-Kyung Choi
Tel: +82 (0)2 37804-698 | E-mail: hkchoi@kgcci.com
Meet Our Team Hee-Kyung Choi

Interview

Ms. Choi, it is already your 11th year at the KGCCI! Tell us about what brought you to the Chamber.

Born in Korea, raised in Germany, and with a degree in English I was soon attracted to working in a multicultural environment. My previous work experience at another foreign Chamber of Commerce served as a springboard to join the Korean-German Chamber of Commerce and Industry which has an amazingly huge network in and outside of Korea. It is always exciting to interact with customers and stakeholders from different industries in line with my personal and professional background.

What are your main responsibilities at the KGCCI?

Primarily having engaged with members in my earlier years, now I am part of the Market Entry & Expansion team. I am mainly focused on identifying the needs of German companies and supporting them to establish a footprint in the Korean market. We offer tailored market research studies and market intelligence especially for the German Mittelstand (SMEs) in their initial phase, our team further supports them regarding business expansion by identifying long term business partners, finding local staff and providing a temporary office. In addition, we facilitate businesses through language and intercultural competencies.

You regularly meet German customers who are new to the Korean market. What advice would you give to Germans who meet Korean business partners for the first time?

Everybody faces challenges when tapping a new market. I would like to touch upon the importance of having an open mindset as well as being aware of the unique business culture. Some might ask themselves about what is said and what is meant during business meetings. However, not to forget that a number of German companies also share similar values with their Korean counterparts and both appreciate long and stable relationships.

Please share your personal message to the KGCCI members and the colleagues.

I appreciate all members giving us constructive feedback on how to further facilitate their business in Korea and Germany. We are eager to enhance our services even more. Also, I want to take this chance to give a big public shout out to all colleagues, particularly to the Market Entry team which has great team spirit!

A system outage in the most wired megacity worldwide

South Korea is known to have the fastest internet and highest smartphone ownership worldwide. Additionally, South Korea also has one of the highest global internet penetration rates. And the country lives up to its reputation. Internet is used for nearly everything in daily life - mobile payment, communication, navigation, food delivery and much more. In South Korea mobile payment services are used by 30% of smartphone users, whereas in Germany only 11% of smartphone owners use this service. More than 60% of the younger generation of South Koreans aged 20-39 use mobile payment regularly. The market in South Korea is expected to further grow and diversely as the competition among mobile payment providers keeps increasing.

An entire internet network, consisting of local internet companies, makes life in South Korea easy, fast and convenient. The variety of apps further enhances the country’s online reputation and digitalization power. One major player within South Korea’s internet network is Kakao Corporation, mainly known for its instant messaging app Kakao Talk. With more than 30 apps they have created an entire Kakao ecosystem. As of November 2019, Kakao Corp.’s total revenues were around 783 billion KRW (ca. 678 million USD). Kakao Talk has more than 44 million monthly active users in Korea, a market share of 97% and a population penetration of 85%. Kakao Corp.’s ecosystem diversified and further expanded internet usage in South Korea. For various aspects of life, such as simple instant messaging or booking hairdresser appointments, apps from one single internet company can be used.

But what happens if one day the entire phone network and the internet shuts off? Will Korean citizens still be able to carry out their day-to-day activities?

In Seoul, also known to be the ‘most wired megacity worldwide’, users of KT, one of South Korea’s biggest telecommunication companies, experienced hours without mobile and internet connection after a fire broke out at a communication center on November 29, 2018. Korean newspapers described this incident as a “dent on Korea’s online reputation”, which was "sparking chaos in Seoul". Affected users in Mapo-gu, Seodaemun-gu, Yongsan-gu, Eungpyeong-gu and parts of Goyang in Gyunggi Province could not receive mobile phone alerts sent by the city of Seoul. Police stations and hospitals could not receive emergency calls. The company’s retail security system stopped working and stores were exposed to crime. Digital bus station announcements stopped working. Credit card payments were disrupted. Various stores like coffee shops, convenience stores, restaurants only accepted cash. In South Korea, however, citizens rarely make cash payments. According to the World Cash Report 2018, South Korea has on a global scale the highest number of card payments per capita and the lowest self-proclaimed cash usage at just 14%. Additionally, people were also unable to withdraw cash during the system outage as many ATMs stopped working. One single fire at one single telecommunication center created a huge chaos within Seoul. The telecommunication company and the South Korean government promised to quickly implement fire prevention measures. The government’s reaction mainly focused on preventing a new fire outbreak. It did, however, not focus on limiting the consequences of a possible system outage.

Lee Manjong, chairman of the Korean Association for Terrorism Studies and professor of the department of Law & Police at Hoseon University, suggested to split up the public safety net and focus on limiting the consequences of a possible system outage. Digital bus station announcements stopped working. Credit card payments were disrupted. Various stores like coffee shops, convenience stores, restaurants only accepted cash. In South Korea, however, citizens rarely make cash payments. According to the World Cash Report 2018, South Korea has on a global scale the highest number of card payments per capita and the lowest self-proclaimed cash usage at just 14%. Additionally, people were also unable to withdraw cash during the system outage as many ATMs stopped working. One single fire at one single telecommunication center created a huge chaos within Seoul. The telecommunication company and the South Korean government promised to quickly implement fire prevention measures. The government’s reaction mainly focused on preventing a new fire outbreak. It did, however, not focus on limiting the consequences of a possible system outage. Lee Manjong, chairman of the Korean Association for Terrorism Studies and professor of the department of Law & Police at Hoseon University, suggested to split up the public safety net and focus on limiting the consequences of a possible system outage.

The fire has certainly warned South Korea’s citizens about the vulnerability of an interconnected world. It is, however, questionable if the South Korean government will implement sufficient security measures to avoid impactful consequences in case of a future system outage due to a cyber-attack or natural hazard.
Media Data

KORUM, the quarterly magazine of the KGCCI, provides information on Korea’s economy, markets, companies, technologies as well as on tax, legal or intercultural topics. The journal also contains information on the activities of KGCCI and its member companies.

KORUM’s target group consists of KGCCI members in Korea and abroad, including decision makers of companies doing business with Korea, business associations and relevant public sector institutions.

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Premium Partner Program 2020

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