

KOREA NATIONAL FOOD CLUSTER

FOODPOLIS

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WATER CHALLENGES

for the Food Industry



International Biz

NIZO Food Research

Industry Leader

Numero Uno,
CJ CHEILJEDANG



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DEAR FRIENDS,

As you may be aware, I have recently been appointed the new Minister of Agriculture, Food & Rural Affairs, under the visionary leadership of our President Park Geun-hye.

It will be my endeavor to raise the profile of the food industry and help Korea's agriculture sector become more competitive.

Every effort is being made to develop the Korea National Food Cluster (FOODPOLIS) as the Northeast Asia Hub for the food Industry. FOODPOLIS is a government-supported food industrial being developed in Iksan, North Jeolla Province with a \$500 million budget and will be complete by 2015.

Located close to China, the fastest growing food market in the world, FOODPOLIS is poised to become the new center for Northeast Asia's food market, which caters to a population of 1.5 billion. The cluster plans to attract 160 domestic and international food companies and research institutes, with a new industrial complex of 2,320,000 sq.m and residential area of 1,260,000 sq.m to serve as both a platform for the food industry and a cultural hub.

This magazine will continue to update you on the latest economic developments, with particular focus on the food industry, so that you can make an informed choice to invest in the cluster and also grow your business opportunities.

I hope you enjoy reading this issue.

LEE Dong Phil

Minister of Agriculture, Food & Rural Affairs

South Korea's Exports to Improve in Q2



South Korea's exports are likely to report a steady improvement in the second quarter (Q2) of this year, buoyed by economic recovery in the US and China. According to the Export Leading Indicator (ELI) disclosed by the Korea Trade-Investment Promotion Agency (KOTRA) and Samsung Economics Research Institute (SERI), for Q2 it jumped 2.3 points on quarter to 54.1. The index was calculated by surveying 2,163 foreign buyers and workers in the country.

The KOTRA-SERI ELI is a numerical indicator that projects export conditions in the upcoming quarter by studying foreign buyers' ordering trends. An ELI reading above 50 implies positive growth in exports from the previous quarter and a reading below 50 means otherwise.

By region, the ELI reading for Asia (excluding China) reported the highest of 60.2, followed by the North America (59.1), Middle East (56.4) and China (55.8). Meanwhile, export conditions in Japan (46.2) that benefits from weaker yen and Europe (48.1) which triggered the financial crisis were expected to suffer from difficulties as their ELI reading fell below the baseline.

FDI Inflow Amounts to \$9bn Last Year

South Korea's inward foreign direct investments (FDIs) reported an on-year fall last year. The amount of fresh FDI made in the country totaled 1.3 trillion won last year, down 18.1 % on-year (1.6 trillion won), according to a report of the United Nations Conference on Trade and Development (UNCTAD) and the Export-Import Bank of Korea (Korea Eximbank).

From the 2000s, Korea's FDI inflows were in the \$3 billion

to \$10 billion range. China's FDI inflows slid 3.4 % on-year to \$119.7 billion last year. South Korea's inward FDI fell short of China's by 7.5 %. The US recorded the highest FDI inflows last year with \$146.7 billion, down 35.3 % on-year (\$226.9 billion).

Major Asian countries including India (\$27.3 billion), Indonesia (\$19.2 billion) and Malaysia (\$12 billion) saw higher FDI inflows than South Korea. Vietnam (\$8.4 billion), Thailand (\$8.1 billion) and the Philippines (\$1.5 billion) were among the Asian countries whose inward FDI was less than South Korea's.



Debt-to-GDP Rate Hits Record High in 2012



The ratio of South Korea's total debt to its economic output rose to a record high in 2012 as debt grew at a faster pace despite the slowing economy. The combined debt of households, companies and the government reached 3,607.3 trillion won (\$3.26 trillion) as of the end of 2012, according to the data by the Bank of Korea.

The ratio of such debt against Korea's 2012 nominal gross domestic product (GDP) reached a record 283 % last year, up from 278 % a year earlier.

The corresponding ratio reached 227 % during the 1997-98 Asian-wide financial crisis. At the height of the global financial turmoil, the ratio came in at 274 % in 2008 and 278 % in 2009.

The rise in the debt-to-GDP ratio in 2012 came as debt expanded at a faster pace than the economic output, spawning concerns that excessive debt holding may turn sour amid the economic downturn.

Government Plans to Spur Growth

The South Korean government markedly cut the nation's economic growth forecast for 2013 from three % to 2.3 %. Following this, it has set a big action plan to stimulate domestic demand. It decided to develop measures to involve the private sector in its effort to attract investment by May this year. To attract foreign investments, the government decided to expand granting residence rights, or green cards, to foreigners who invest in real estates in Korea. The authorities also intend to address mounting household debt by raising the share of fixed-rate loans out of total home-equity loans extended by banks to the 30 % range by 2016.

As for boosting employment-to-population ratio, the government will work on measures of giving incentives to corporations that increase new hiring, and unveil a comprehensive action plan to create jobs for senior citizens in July. The government also said it will provide tax incentives and financial support to aid the creative service industry.

The action plans also included a policy that awards income tax and corporate tax exemptions to conglomerates that transfer technologies to the nation's small and medium-sized businesses (SMB). A task force devoted to fostering the domestic service sector will be founded by May.



Supplementary Budget to Revive Economy

South Korea drew up an extra budget worth 17.3 trillion won (\$15.4 billion) for this year in a bid to revitalize its economy faced with gloomy market conditions at home and abroad. The budget plan, which was endorsed by a Cabinet meeting, is the largest since 2009 when the nation unveiled 28.4 trillion won in additional spending in the wake of the global financial crisis. The proposal for the latest extra budget, which will come on top of a 342 trillion won annual budget for 2013.

Of the extra budget plan, 12 trillion won will be used to fill the estimated revenue shortfalls caused by the slowing economic recovery and scrapped plans to sell stakes in banks this year, said the finance ministry which is in charge of the country's budget affairs. The remainder 5.3 trillion won is a net increase in the government's budget, which will mostly be spent on boosting job creation and stabilizing the livelihoods of ordinary working-class people.

In particular, the government plans to use the money to create about 40,000 additional jobs, a move it expects would encourage the private sector to follow suit in the state-led job creation efforts.

Separately, the government will also tap into state-run funds worth 2 trillion won aimed at bolstering the sluggish housing market.

Plans to Reform Produce Distribution System

The Ministry of Agriculture, Food and Rural Affairs unveiled its plan to reform the produce distribution system in order to help tame inflation at the Blue House. The ministry reported to President Park Geun-hye that it would perform a major overhaul of the current distribution process to reduce the financial burden on consumers.

According to the plan, stores where consumers and farmers directly transact will be increased from the current 20 to 200. The Korea Agro-Fisheries and Food Trade Corporation will be in charge of running the stores. In cooperation with Nonghyup, the National Agricultural Cooperative Federation, the ministry will expand bodies that oversee shipments of agricultural products to 600 by 2016.

In order to help cut logistics costs by 50 %, the government will set up five logistics centers in each province of the country. The government also plans to renovate 32 wholesale markets in order to help them gain competitiveness.

For products with widely fluctuating prices, the ministry will set appropriate levels for prices rather than relying on short-term measures like bringing in more imports or cutting tariffs.



FTA with Turkey to Take Effect in May

South Korea's free trade agreement (FTA) with Turkey will go into effect in May, opening the door for the two nations to expand bilateral trade and boost economic cooperation. The FTA will completely remove import tariffs on nearly all products of both countries within the next 10 years.

The agreement deals only with products, with negotiations for similar deals for the service and investment sectors to be launched within one year following the implementation of the product FTA. The trade deal was officially signed on Aug. 1st, 2012, but its implementation had been delayed until its approval by Turkey's parliament. South Korea's National Assembly ratified the bilateral FTA late last year.



The bilateral trade deal is South Korea's ninth FTA. Seoul has eight other bilateral and multilateral free trade agreements with 45 countries, including the United States and members of the European Union.

In 2012, Turkey was South Korea's 25th -largest trading partner with \$4.55 billion worth of goods shipped there with imports from the European country amounting to \$672 million. The FTA is expected to boost South Korea's gross domestic product by 0.01 % in the first five years of its implementation and by 0.03 % in 10 years.

South Korea, Colombia Officially Sign FTA

South Korea and Colombia signed a bilateral free trade agreement, opening a new era of trade for both countries on February 21st. The resource-rich Colombia is the tenth nation South Korea has signed an FTA with and the third in South America, while it is the first Asian country to ink such an agreement with the South American nation.

Under the agreement, both countries will abolish tariffs on over 96 % of the other country's products within ten years after the bilateral accord takes off.

South Korea hopes to increase its exports of automobiles, automotive components, textiles, plastics, and steel, while Colombia expects a growth of exports of agricultural products such as coffee, bananas, and natural resources including crude oil.

Colombia will gradually lift the tariff of 35 % on automobiles in three steps within ten years and for midsize diesel-powered vehicles within nine years. The import tax for key automotive components including tires will be eliminated immediately or within five years. The trade volume between the two countries amounted to \$1.89 billion in 2012.

Seoul, Beijing, Tokyo begin FTA talks

South Korea, China and Japan opened their first round of free trade talks in the last week of March to discuss details including the scope of negotiations.

In November last year, the three nations declared the start of free trade talks aimed at boosting their trade, a move also seen as helping to ease territorial tension in the North-east Asian region.

South Korea and China are currently in talks over their bilateral free trade agreement. Free trade talks between Seoul and Tokyo have been stalled since late 2004, mainly because of Japan's reluctance to lower tariffs on agricultural goods.

The ambitious three-way pact, if realized, would create one of the world's largest markets as the three nations account for 20 % of the global gross domestic product (GDP), 17.5 % of all global trade and 22 % of the global population.



Top 30 Groups to Invest 149 trillion Won



The nation's top 30 conglomerates will invest a combined 149 trillion won this year in facility expansion and research and development (R&D), up 10 trillion won or 7.7 % from last year. They will also create 128,000 new jobs, up 2,000 or 1.5 % from the previous year.

Of the 149 trillion won, 61 %, or 91.1 trillion won, will be used to expand facilities, the largest yearly amount ever. Another 29.4 trillion won will be for R&D, 13.8 % up from last year's spending.

Among the groups, Samsung plans to invest 49 trillion won, about 10 % more than the amount it actually spent last year, 45 trillion won. Its original plan last year was 47.8 trillion won.

Hyundai Motor Group said it would invest around 14.1 trillion won similar to last year's. SK plans to spend 16.6 trillion won, also about 10 % more than last year's actual spending.

LG's investment scheme amounts to 20 trillion won, the largest ever. The company plans to spend 14 trillion won for facilities and 6 trillion won for R&D.

Retailers Launch Consultative Body

Representatives of large discount store chains, supermarket chains, grocery stores, conventional markets, department stores, convenience stores and franchises on Wednesday launched a consultative body to discuss ways to cooperate to improve the retail industry.

The new nongovernmental group is an expanded and revamped version of an existing council of retailers joined by franchises and convenience stores.

The council of retailers, organized by the government, managed to reach a consensus on having discount store chains close two days a month and refrain from opening new

branches after retailers filed some 131 administrative lawsuits against local governments over regulations last year.

Trade associations of chain stores, department stores, franchises and convenience stores as well as groups of merchants, cooperatives of supermarkets and chain businesses will put their heads together to figure out how to achieve mutual prosperity and improve the overall retail industry.

The new body plans to propose policies and rules, conduct research, and support overseas market entries and career training in addition to seeking cooperation among retailers and manufacturers.



U.S. Trade Report Wants Access to Beef Market

The U.S. government said it will continue to pressure the Korean government to fully open its beef market, according to an annual report by the United States Trade Representative.

"The U.S. will continue to urge Korea to open its market fully to U.S. beef and beef products based on science, the OIE (World Organization for Animal Health) guidelines and the United States' risk status," said a report on sanitary and phytosanitary measures.

After the mad cow disease crisis that swept Korea with massive candlelight vigils against U.S. beef imports in 2008, Korean importers bring in U.S. beef and beef products only from animals less than 30 months of age as a transitional measure until consumer confidence improves.

The report said the United States exported \$582 million worth of beef to Korea last year, making Korea the fourth-largest export market for U.S. beef.

The U.S. government has long been hinting at renegotiating the beef issue. The Park Geun-hye government also is considering that its first FTA-related negotiation with the United States will likely involve the beef issue.

Dongwon F&B Enters Chinese Canned Tuna Market

South Korea's major food company Dongwon F&B said it signed a partnership deal with China-based Bright Food Group to enter the Chinese canned tuna market. Under the deal, Dongwon F&B will supply canned tuna, and Bright Food Group will distribute and sell the products in China.

Bright Food Group is China's largest food producer and distributor and has a distribution network of over 10,000 large-scale discount stores and convenience stores.

By utilizing the vast network, Dongwon F&B aims to post annual sales of canned tuna worth 500 billion won (\$463.37 million) by 2018 in China.

If the canned tuna business thrives, the Korean company plans to add more products after negotiation with the Chinese company. Prior to the deal, Dongwon F&B began selling canned tuna in China via TV home shopping in 2011 and recorded sales totaling 10 billion won last year.



California Costco Shoppers can Pick up Daesang Kimchi

Daesang said its packaged kimchi brand Jonggatjip Kimchi has made it to the shelves of Costco, the largest warehouse-type retailer based in the United States. Jonggatjip Kimchi has been available only at Korean and Asian stores in the United States.

While starting to supply its kimchi to Costco stores in Southern California, the company said it plans to expand throughout the country.

According to data from Statistics Korea, the export volume of packaged kimchi to the U.S. amounted to 1,047 tons last year, worth \$3.87 million. It was estimated that Daesang's Jonggatjip Kimchi accounted for 70 % of imports.



Nongshim to Sell Products on Chinese Online Shopping Mall

Nongshim, South Korea's leading instant noodle maker has become the first Korean food company to be enlisted as a seller on an online shopping mall of China's e-commerce giant Alibaba.

"We partnered with Taobao to sell 50 kinds of our items," noted an official. "We also have created a team consisting of marketing, sales and logistics staffs. And our plan is to utilize manufacturing base and sales network in China including Shanghai, Shenyang and Qingdao to better satisfy Chinese customers' needs.

With this footstep, Nongshim aims at increasing its sales in China 38 % on-year to \$165 million this year. The Chinese online market is growing at a pace of 100 % annually. Founded in 2003, Taobao with annual sales of one trillion won yuan (180 trillion won or \$16 billion) overtook the global online market e-Bay and Amazon to emerge as the world's top e-commerce giant. Taobao's share reaches as high as 90 % in the Chinese online market.



CJ Cheil Jedang Aims to Raise Global Feed Sales

South Korea's leading processed food maker CJ Cheil Jedang has launched an effort to achieve one trillion won (\$917.56 million) in feed sales worldwide.

The company built two new production plants in each of the countries including China, Vietnam and Indonesia, totaling six plants. As a result, the company will have a total of 22 overseas feed plants.

CJ Cheil Jedang expects its fodder business will serve as a new cash cow, since meat consumption is rising in China and Southeast Asia, fueling an exponential increase in demand for feed.

CJ Cheil Jedang began to operate its two new plants at strategically important locations, Shandong province and Jilin province, last year, and will have a total of 12 production sites if the company adds two production plants this year.

The food company will be focused on strengthening its livestock subsidiaries by directly operating farms, leasing farms or signing a sole farm rent contract to boost sales and help its presence take root in Indonesia.

CJ Cheil Jedang posted 838.7 billion won in global fodder sales last year. The sales are up 19 % from 704.2 billion won of 2011.



Hite Jinro's Max Beer Nabs Global Brewing Award

Hite Jinro, Korea's leading beer and soju producer said that its lager Max has won the top prize at one of the world's three largest brewing contests in Britain.

The Korean brewer was selected as a gold medalist in the 4.5~4.9 % alcohol by volume lager sector, beating Singaporean lager Tiger and Japan's Asahi Super Dry which took silver

and bronze, respectively.

The company was the only Korean winner of the International Brewing Awards 2013, hosted by the Brewing, Food & Beverage Industry Suppliers Association.

The International Brewing Awards is the longest-running tradition of its kind, and is annually hosted by BFBi, founded in 1886.



Paldo Returns to Snack Market

Paldo, a local food company specializing in instant noodles, announced that it has returned to the snack market and revived three snack products that were popular in the 1990s. The decision came seven years after the company decided to leave the market to concentrate on ramen and beverage businesses.

The local snack market's steady growth and consumers' yearning for old Paldo snack brands were behind the company entering the sector again, Paldo explained.

The firm is aiming for 2 billion won in sales this year.

Hanwha to Turn Cafes into Social Enterprise

Hanwha Group said it will turn its coffee business Beans & Berries into a social enterprise starting next year, meaning its entire profit will be spent on the socially vulnerable.

Beans & Berries, a brand developed by Hanwha Galleria in 2006, will be separated from the conglomerate in the second half of this year and seek government accreditation as a social enterprise next year, Hanwha Group said in a press release.

Hanwha Galleria directly runs 36 Beans & Berries stores mostly in Galleria department stores and buildings of affiliate companies.

Hanwha has discussed how to spend the earnings and run the business for the public interest with the Work Together Foundation, the nation's largest organization that supports social enterprises.

Hanwha plans to develop new menus in partnership with various social welfare institutions and social enterprises, share Beans & Berries' marketing and start-up knowhow with small business owners, and provide them with financial assistance.

Beans & Berries' barista and service education programs will also be open to those in need of professional training opportunities. Profits generated from the first half of this year will be used for career training and employment of the socially vulnerable, and to support mom-and-pop stores, Hanwha said.

Kolon Pulls Out of Bakery Business

South Korea's mid-size conglomerate Kolon Group decided to withdraw from the bakery business. The move came from a fierce criticism against large companies that are encroaching on business areas for small and medium businesses (SMBs).

Kolon announced that it donated Chairman Lee Woong-yeol's 19.97 % stake (139 million shares) in its restaurant franchise Sweet Meal to a non-profit scholarship foundation operated by Kolon Group.

Sweet Meal is a restaurant affiliate of Kolon that runs bakery franchise Beard Papa, coffee shops and cheese cake shops. Its annual sales are estimated at 3.9 billion won (\$3.5 million).

Kolon Industry is currently the largest shareholder of Sweet Meal with a 57.14 % stake (four million shares) while Japanese restaurant company Mugino Ho is the second largest with holding a 22.89 % stake.

Sweet Meal has so far sidestepped the criticism that local

conglomerates are stifling smaller bakery stores by aggressively expanding bakery franchise businesses as it is for small store business operated at department stores.



Woongjin Group Puts Food Unit up for Sale

Woongjin Group, a financially-troubled conglomerate in South Korea, put its food subsidiary Woongjin Foods up for sale. Creditors of Woongjin Holdings, which is under court receivership, decided to sell its major food unit Woongjin Foods and sent proposals for the sale of stakes in the food company to five to six companies including Nongshim and Lotte Chilsung Beverage.

These companies are positive to the idea of buying the subsidiary as they deem Woongjin Foods, which posts solid sales and has a robust operation capacity, is put on the market at a more favorable price, said the sources. Among the prospective buyers, Nongshim is keenly interested in acquiring the food company since Nongshim lost a distribution right of a local bottled water product Samdasoo and thus racked up sales losses of 200 billion won (\$189.32 million) in the beverage business.

Nongshim decided to strengthen its food and beverage business this year to recoup its losses in the bottled water market. Woongjin Group had sought to sell its food affiliate for 100 billion won in mid-2012, but during a negotiation over its sale price, the group faced a liquidity crisis and consequently was put under court receivership.



Korea, World's Second-Most Innovative Country'

Korea ranks second out of 50 countries on Bloomberg's annual Global Innovative Index. The Innovative Index for each country is evaluated based on seven factors: R&D intensity, productivity, high-tech density, researcher concentration, manufacturing capability, education level, and patent activity.

Korea, which stood at third place last year, climbed one notch. Korea was ranked first in patent activity and was in the top quarter in the categories of productivity, education level, and R&D intensity. However, the country lagged behind in productivity, only taking 32nd place.

The U.S. jumped up to the first spot from seventh, possibly due to its outstanding results in high-tech density. Japan and Singapore were the only other Asian countries in the top ten, taking sixth and seventh place respectively.



Incheon Airport Ranked Top for World's Best Service

Incheon International Airport has again proved to be No. 1 in the world. The airport received top ranking in the Airport Service Quality (ASQ) survey for the eighth consecutive year. Singapore Changi Airport was ranked second, followed by Beijing Capital International Airport, Hong Kong International Airport, and Japan's Nagoya Airport.

The survey also ranked Gimpo International Airport top in the category of medium-sized airports (15-25 million passengers annually) for the third year in a row in the survey, which was conducted by the Airports Council International (ACI), an association of 1,700 airports in 198 countries.

ACI conducted the survey on 350,000 airport users in order to rate passenger satisfaction level last year. Incheon International Airport received the highest scores in 26 of the



survey's 34 categories, including service quality, customs procedures, facilities, and management. The key to winning best passenger satisfaction ratings is advanced customs service in all procedures from arrival to departure provided by the airport's customs staff, according to the Korea Customs Service.

Incheon Airport Customs also provides other unique services, such as introducing a credit card payment system for declaration of duty-free goods priced over the tax-free permission limit, running a service desk for tourists, and finding and returning lost passports to their owners in Korea.

Seoul to Build More Guest Houses for Int'l Tourists

The Seoul Metropolitan Government said it plans to make 350 more lodging establishments available for international tourists this year as part of efforts to boost convenience and attract more visitors from overseas.

In response to the growing demand from international tourists for places to stay amid the scarcity of hotel rooms, the municipal government said it will come up with 350 rental houses, or 1,000 rooms, by the end of this year.

The number of foreign tourists in South Korea has been growing by double-digits each year, but the growth rate in the number of newly-built accommodations reached less than 3 % on average, leading to a constant shortage of lodgings available for visitors, according to the data provided by the Korea Tourism Organization.

The city also plans to establish an integrated website for the reservations of such rental rooms to better connect tourists with guest house operators. The city will also offer regular training sessions for would-be operators, while asking the central government to revise relevant rules to better manage those accommodations and protect both service providers and users.

BUSINESS SUPPORT PROGRAMS

The Korea National Food Cluster (FOODPOLIS) is currently being developed by the Korean government with the aim of complete construction by 2015 in Iksan, Jeollabuk-do. The following article gives you an overview of business support programs for investors in the cluster.



FOODPOLIS will become the new center of the 1.5 billion-population food market of Northeast Asia and further of the 68 billion population of the world.

The Cluster plans to be home to 160 local and international food companies and research institutes with two attractive new developments. Together, the new 2,320,000m² (232ha) industrial complex specializing in food and the new 1,260,000m² (126ha) residential complex will serve as a platform for both the food industry and cultural hub.

While full details of the project can be made available to potential investors, we outline a few important business support programs that have been lined up.

Technical

FOODPOLIS provides various technical support to tenant companies to address issues occurring in the food supply chain. Also, the cluster provides world-class technology acquired through close networks established with global food R&D facilities to tenant companies.

Analysis & Testing

Based on the food regulations of Korea and ISO/IEC 17025, the program performs chemical tests, microscopic organism tests, contaminant tests and new toxic substance tests.

Preferential quality analysis

To utilize equipment and technology that allows objective sensory profiling. Specialized sensory testers are used to improve product quality.

Standardization of food ingredients

To enable standardizing procedures necessary in developing functional materials, such as material structure profiling, basic material standardization and production process standardization.

Test-tube and animal studies for functional food development

To support functional material effect analysis and safety assessment through test-tube and rodent testing. Test-tube experiments perform reverse mutation tests, chromosomal anomalies tests and



micronucleus tests to identify genetic toxicity.

Rodent (rat, mouse) toxic testing is performed with a single injection test and multiple injection test at a facility that meets the standards of the GLP (Good Laboratory Practice) and AAALAC-I (Association for Assessment and Accreditation of Laboratory Animal Care International).

R&D support

FOODPOLIS signs a confidential 1:1 contract to provide practical R&D tailored to their needs. This program supports tenant companies through production process improvement and new product development.

Food packaging

To improve the quality of food, the program supports tenant companies with expiration date setting, packaging material construction, gas penetration analysis, water penetration analysis, packaging strength tests, compression tests and tensile strength tests.

Food distribution

To satisfy the ISTA (International Safe Transport Association) standards, the program supports vibration tests, free-fall tests, impact tests and logistic distribution RFID tests.

Food quality safety

- Production process and quality improvement of existing products
- Preferential quality analysis for new product development
- High efficiency identification and control technology development

Food functionality

- Material standardizing for functional food development and certification
- Standardization of production process
- Functional material construction profiling, effect assessment, safety assessment

Food packaging

- Design of appropriate packaging for each product
- Environment-friendly and intelligent packaging
- Development of technology for product expiration date extension and increased safety during distribution
- Product distribution system research and development

Training and Service

FOODPOLIS provides education in analysis technology, production technology, food hygiene, functional food and food packaging to help improve tenant companies' capability.

Food analysis technology

Basic food analysis course (food chemical analysis, food microscopic organism analysis outline) and specialist course (GMO, contaminant analysis, new toxic material analysis such as noro-virus) are provided.

Food hygiene

Hygiene education for employees according to HACCP, ISO 22000 and Korean regulations

Domestic/overseas food related regulations

Courses to provide basic understanding of domestic/overseas food related regulations and functional health food related regulations

Functional food development

Education in functional health food development, functional material development related technology and functionality assessment

Food packaging

Education in packaging material and designing packaging suited to each product

Food processing/production technology

Overall education in practical production and processing technology utilizing local specialized high schools and colleges

Consultation

FOODPOLIS offers consulting to tenant companies on improving production processes, quality management, functional material development and packaging design.

Food hygiene

Improvement of factory production process lines, facility-related auditing for quality improvement, etc.

Food technology

Food production/processing high technology (heating, freezing, drying, etc), factory facility design inspection

Functionality assessment

Development of functional materials, functionality assessment, etc.

Food packaging

Expiration date extension technology, package design for quality improvement, business packaging process improvement, etc.

High Value-Added R&D

Between 2015 and 2020, FOODPOLIS plans to invest \$79.1 million to support the R&D activities of its tenant companies. The R&D concentrates its efforts on converting research outcomes of universities and research institutes to practical technologies. Converged-technology food, fermented food, global preferred food and other various foods are the subjects of research. The support will promote high added value through functional food material standardization, functionality assessment support and safety assessment support. Functional food research requires long research periods and has a low success rate in comparison to its high investment funds. FOODPOLIS will offer a practical solution

that will overcome such characteristics to tenant companies.

High value-added commercialization R&D

FOODPOLIS operates various R&D Support Systems. Through the R&D support system, tenant companies will be able to take care of administrative procedures such as application, contract signing and process management. Also, the program supports matching services through domestic/overseas specialist database and industry-university networks to provide the technology needed by tenant companies.

The Food R&D 2.0 Platform that the Agency for Korea National Food Cluster operates is one of key pillars of research support. The Platform is based on the Bridge R&D program that facilitates the commercialization of academic results through the development of viable production technologies. Through the combination of its thoroughgoing network of relationships with domestic and non-domestic companies and its solid infrastructure (three major R&D centers), FOODPOLIS will surely turn the Food

R&D 2.0 Platform into a great success. FOODPOLIS is the first government-led food industrial complex and has established close networks with world-class clusters. FOODPOLIS will utilize its various domestic and overseas networks to support the R&D and business of tenant companies. FOODPOLIS will become the center of not only Korea but also the food R&D industry of the world.

Export SupportJoint material procurement

FOODPOLIS performs group and joint purchasing (joint contract, purchase, long-term purchase) to achieve stable material procurement and obtain overseas material market information with aT (Korea Agro-Fisheries & Food Trade Corporation) and major grain groups. Also, an import material information network for wheat, corn and beans, which Korea produces small amounts of, will be established.

General Bonded Area

FOODPOLIS will operate a General Bonded Area, which will serve as a springboard for tenant enterprises to make inroads into North East Asian

markets such as China. As customs and duties on raw materials do not have to be paid until the finalization of processing and export, a General Bonded Area can create a great advantage for export-oriented companies that process imported materials for export. In particular, industries with high import dependency such as wheat, soy beans, oranges and coffee will enjoy great benefits by making use of the area.

Comprehensive export support

FOODPOLIS is willing to establish a one-stop export support system to provide tenant businesses with comprehensive assistance, covering the entire export process such as offering export information and buyer consulting. In addition, a trade education program will be provided to help tenant enterprises gain basic understanding of trade.

Overseas marketing support

FOODPOLIS supports overseas marketing of tenant companies. Tenant companies will attend renowned overseas exhibitions, special FOODPOLIS exhibitions, major buyers invitation programs and so on. Especially, FOODPOLIS will provide information and hold research forums and

seminars in markets with large potentials such as Halal, India, Mediterranean, Mexico, South America and Africa.

Supplying & Attracting Talent in Food Industry

To support tenant companies, FOODPOLIS will foster production-capable talents and talented R&D human resources by operating specialized high schools and colleges.

FOODPOLIS fosters talents for practical production fields. To achieve such a goal, a food specialized high school is founded and local specialized high schools have implemented food curriculums to develop local human resources in food production.

To supply talented human resources, FOODPOLIS will financially support companies and university research projects with the government. International recruiting will be performed to attract overseas talents and FOODPOLIS will receive human resource databases from universities to help companies find the talents they need. FOODPOLIS will also utilize the recruitment support system of the Ministry of Labor to establish a human resources pool.

Alleviating Financial Burdens

FOODPOLIS promotes investment of tenant companies and supports business success through designating main banks (1 or 2), establishing FOODPOLIS funds. The main bank will offer a comprehensive support service capable of business fund loans as well as financial consulting and management consulting. FOODPOLIS funds will support land purchases and construction for early investment companies in 2013-2014. It will also offer a FOODPOLIS Specialized Investment Fund, a comprehensive support service system to support new product development and overseas expansion.



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FUND-OF-FUNDS OPERATION PLAN

The Ministry of Agriculture, Food and Rural Affairs recently announced its Agri-food Product Fund-of-Funds Operation Plan in 2013.



농림축산식품부
Ministry of Agriculture, Food and Rural Affairs

Having noted that the agri-food products fund of funds has laid a systematic foundation and grown in size, since its introduction in 2010, the Ministry for Agriculture, Food and Rural Affairs (MAFRA) has chalked out plans to continuously expand fund creation and launched seven additional funds, for an amount of 90 billion won this year.

They include two agriculture, forestry, and livestock funds (30 billion won), one food fund (15 billion won), and one fisheries fund (15 billion won). In addition, two exclusive funds for small business entities (20 billion won) having an annual sales of 3 billion won or below have been formed to support areas easily excluded from investment, continuing from last year, and a sharing fund (over 10 billion won) for the joint growth of the industrial and agricultural fields is planned for promotion through a demonstration project this year.



The ministry notes that the formation of agri-food funds is beginning in full-scale and fund formation size is expanding, so active investment vitalization plans have been prepared.

The preferred loss allowance ratio will be adjusted downwards (8%-5% of total formation amount) to encourage the formation of general funds (two agriculture, forestry, and livestock funds, one food fund, and one fisheries fund) which have a relatively low government investment rate, and the minimum investment rate of fund management companies (task enforcement association) will be adjusted downwards as well (10%-7% of the total formation amount).

In addition, financial institutions like banks, insurance companies, asset management companies, and securities companies having specialized operational capabilities on investment assets will be

allowed to become agri-food investment cooperative joint task enforcement associations through a revision of the law, with the fund registration requirement alleviated by reducing the scope of those subject to checking on grounds for disqualification to officers and fund managers, at the time of cooperative registration.

The incubation business for business entities possessing outstanding technology or items, conducted as a demonstration project last year, and the discovery of business entities subject to investment through operating an investment counselor and investment road show by function and theme will be regularized.

Moreover, a reformation is planned for more effective events by running an investment road show by function and theme in addition to solidly developing investment entities through MOUs with

local governments and farmers' groups.

In addition, a division exclusively in charge of risk control at the agriculture policy funds management office, and an investment management specializing institution for transparent fund management and reduction of investment risks will be established. Likewise, investment fund management covering the whole-period, and post-management of investment funds will be further strengthened, by operating a consulting program for invested business entity post-management.

The ministry has stated that it plans to continuously expand the agri-food fund of funds so that the industry can rise into a promising area for investment in the market. The agri-food fund of funds will function as Sector 3 policy finance, replacing or supplementing traditional agri-food finance focused on financial affairs.

Details

Fund formation

- Expand formation of special funds such as small agrifood business funds (project) (3 funds)
 - Form general funds (4 funds) in areas like agriculture and fisheries by considering policy priorities
- Formation of two exclusive funds for small and medium sized entities at 10 billion won each and one sharing fund (10 billion won)
- » Conduct prior market survey for forming a (tentatively named) 'agri-food sharing project fund' where large corporations related to agri-food and local governments participate and prepare operating methods (first half of the year)
- Formation of four general funds including agriculture, forestry, and livestock funds; food funds; and fisheries funds
- » The exclusive fund for small and medium sized entities will 100% invest in agri-food business entities with yearly sales of 3 billion won or less
 - » Alleviate the preferred loss allowance rate (general fund: 8% → 5%) while maintaining the level of the previous year for yield rate (7%) and investment rate (50%) for the fund of funds.
- Upward adjustment of the government investment rate to 70%, which is higher than general funds (50%), and downward adjustment of the yield basis to 3%, which is lower than general funds (7%).
- Allow joint operation of agri-food investment cooperatives to encourage the agri-food fund of funds, and alleviate registration requirements (promote revision of the law)

Agri-food Fund of Funds Investment Plan (agenda) for 2013

Schedule:

Announce investment plan (February),
Select operator (April)
and form investment cooperative (July ~)

Classification	Investment area	Fund form	Number of funds	Government investment rate	Investment amount (won)		Total
					Fund of funds	Private investment	
General	Agriculture, forestry, and livestock industry	Agri-food investment cooperative	2	50%	7.5 billion	7.5 billion	15 billion
					7.5 billion	7.5 billion	
	Food industry	Agri-food investment cooperative	1	50%	7.5 billion	7.5 billion	15 billion
	Fishing industry	Agri-food investment cooperative	1	50%	7.5 billion	7.5 billion	15 billion
Special purpose	Small projects	Agri-food investment cooperative	2	70%	7 billion	3 billion	10 billion
					7 billion	3 billion	
	Sharing project	Agri-food investment cooperative	2	Not decided	7 billion	Not decided	<10 billion
Total			7		51 billion	39 billion	< 90 billion

Investment support and post-management

- » Conduct investment road shows by function and theme and incubating program for agri-food business entities
- » Manage agri-food investment cooperatives for the whole-period and strengthen risk control

Details

Investment support



- Make a three-dimensional discovery of investment entities through investment road shows by function and theme and MOUs entered into with main farmers' groups and local governments
- » Operate investment road shows by function and theme (5 times), rather than as a regional event, and operate an investment-consulting center in various events (10 times).
- Operate an incubation business for business entities possessing outstanding business items
- » Engage in continuous discovery of business entities subject to the project through individual investment consulting, investment road shows, and investment consulting support businesses
- Carry out specialized training for certified officers of agri-food investment cooperatives and produce and implement online investment education materials (attracting investment, finance and accounting, management strategies, etc.) for business entities.

Details

Post-management

Organize investment control organizations to strengthen risk control

- » Establish divisions for risk control for fair and transparent fund management (increase staff by two) to divide fund operation and risk control (first half of the year).
Manage the whole period to strengthen post-management control of investment in agri-food business entities
- » Monitor the business progress to achieve investment goals by phase, and operate a value improvement program (annually).
Strengthen alliances to enhance connection with agri-food funds and farming and fishing policies
- » Select business entities for local strategy clusters, connect the agri-food fund of funds with policy projects such as fostering companies merging agriculture, manufacturing, and commerce, and promote the participation of certified officers (annually)



WATER CHALLENGES FOR THE FOOD INDUSTRY

The role of the food industry in helping consumers eat healthily and sustainably has been receiving considerable attention in recent years. There are many challenges the industry faces, in securing the future supply of food – water being among the most important.



UN WATER
World Water Day
2013
International Year of
Water Cooperation

The United Nations has declared 2013 the International Year of Water Cooperation. The objective is to raise awareness, both on the potential for increased cooperation, and on the challenges facing water management in light of the increased demand for water access, allocation and services.

The year will highlight the history of successful water cooperation, as well as identify issues on education, diplomacy, trans boundary water management, financing, national and international legal frameworks, and linkages with the Millennium Development Goals. It also will provide an opportunity to capitalize

on the momentum created at the United Nations Conference on Sustainable Development (Rio+20), and to support the formulation of new objectives that will contribute towards developing water resources that are truly sustainable.

Water, a vital resource unlike any other knows no borders. But for perhaps the first time in history, global demand may outstrip supply.

The world's population is around 7 billion people and by 2050 it may well grow to 9 billion. And by that time, 70% of the people will be urbanized.

Cities may take less than 1% of the land, but they can take up to 20% of

the water. As rapid urbanization, climate change and growing food needs put ever-increasing pressure on freshwater resources; the objective of the year is to draw attention to the benefits of cooperation in water management. It will serve to highlight successful examples of water cooperation and explore key issues, including water diplomacy, trans-boundary water management and financial cooperation.

The potential for water cooperation is great and its benefits, whether in economic, social or environmental terms, are considerable. All water systems are extremely complex, be they management





systems at the local or national level, internationally shared river basins or parts of the natural hydrological cycle. Managing these systems requires multiple actors, from users and managers to experts from various disciplines and decision-makers.

Cooperation is crucial not only to ensure the sustainable and equitable distribution of water but also to foster and maintain peaceful relations within and among communities.

At the government level, different ministries can cooperate and mainstream awareness on water management into other sectors; at the community level users can cooperate through water users' associations; at the trans boundary level joint management institutions can help to distribute and protect shared resources; and at the international level the various UN agencies can work together to

promote the sustainable management of water worldwide.

Cooperation mechanisms vary in terms of decision-making structures, levels of participation and rules and regulations. They can take the form of informal agreements or formal institutions, and they range from a simple exchange of information to joint management mechanisms.

While governments the world over are geared up to meet the water challenges, what about the corporate sector?

Water in Industrial Use

Agriculture at present uses the lion's share of water worldwide, with between 70% and 90% of all water in most regions. As noted by Dr Ania Grobicki, Executive Secretary of the Global Water Partnership, United Nations Industrial

Development Organization, in her study on 'The Future of Water Use in Industry,' interestingly, the East Asia/Pacific region and sub-Saharan Africa are the two exceptions to this, with industrial water use taking a large proportion of water, but for opposite reasons: in East Asia/Pacific, industry has grown extremely rapidly and often unsustainably in recent years. Industry now provides 48% of the total GDP in the region, and this proportion is still increasing.

On the other hand, in sub-Saharan Africa, industry takes a large share of total water use not because the industrial sector is especially strong, but because most agriculture is rain-fed and there is relatively little water storage available on the continent.

A 2010 report titled Direct and Indirect Water Withdrawals for U.S. Industrial Sectors, published by Carnegie

Mellon University, has segmented water usage by industry sector, taking into consideration both direct water usage (bringing water into a manufacturing facility) and indirect water usage (when a manufacturing facility is buying items from the supply chain that were manufactured by someone else using water).

The findings show that in terms of direct water usage, the agriculture and power-generation industries together are responsible for 90 % of direct water withdrawals. However, a majority of water usage (about 60 %) is indirect and more than 96 % of industry sectors use more water indirectly in their supply chains.

Fruit & Vegetable Farming

According to the report, while meat farming is often targeted as an energy- and carbon-intensive sector, it shows up

lower on the list in terms of water use per dollar of economic output than fruit, grain and vegetable farming. Thirsty cash crops like wheat, corn, rice, cotton and sugarcane lead the pack in water usage.

Power Generation

Water is used at almost every stage of energy production, including pumping crude oil, removing pollutants from power plant exhaust, generating steam to run turbines, washing away residue after fossil fuels are burned and keeping power plants cool. Within the energy industry, the most water-hungry process is the thermoelectric-power industry, which uses plentiful amounts of water to cool electricity-generating equipment. Overall, electrical power production uses more water than any other single industrial process, according to IEEE Spectrum.

Textiles and Garments

The textile industry is one of the biggest creators of wastewater worldwide. According to the U.S. EPA, it takes 2,900

gallons of water to produce a single pair of jeans. Most of this water is used in what's known as "wet processing" as well as dyeing of fabric.

Meat Production

According to a study by the UNESCO Institute for Water Education, conducted between 1996 and 2005, "29 % of the total water footprint of the agricultural sector in the world is related to the production of animal products." One-third of that water is used to raise beef cattle.

Beverage Industry

Another heavy user of water is the beverage industry, which produces sodas, beers, juices and other drinks. Yet it isn't necessarily the production and bottling processes that are to blame. Rather, it is the plants: the beverage industry requires farmed products such as sugar, barley, coffee, chocolate, lemons, vanilla and other plant-derived ingredients. All in all, it takes between 180 and 328 gallons of



water to produce a 2-liter bottle of soda, 20 gallons of water to make a pint of beer and nearly 37 gallons of water to produce the ingredients to make a single cup of coffee, according to the Water Footprint Network.

Automotive Manufacturing

It takes about 39,000 gallons of water to produce the average domestic car, including the tires. Major water uses in the automotive manufacturing industry include surface treatment and coating, paint spray booths, washing/rinsing/hosing, cooling, air conditioning systems and boilers.

Water in Food Industry

It goes without saying that the corporate sector, in particular the food and beverages industry too can play a very important role in water cooperation.

Water is a critical resource for the F&B industries. It is used for numerous purposes, including chilling, heating, washing, rinsing, sanitizing, processing, and conveying. Large amounts of water are also incorporated directly into a wide range of products.

As noted by Grace Communications Foundation (www.gracelinks.org), which builds partnerships and develops innovative media strategies that increase public awareness of the relationships among food, water and energy systems, it takes a surprisingly large amount of water to make processed foods and beverages.

What we eat everyday – our diet – makes up 50 % of our total water footprint, which includes the enormous volume of “virtual water” needed to produce our food.

“For instance, wheat requires 132 gallons of water per pound, and a pound of cheese takes about 600 gallons. Therefore, a cheese sandwich represents approximately 100 gallons of water (and that’s just for a couple of cheese slices). Throw in a bag of potato chips and it takes about 150 gallons of water to make your lunch! Thirsty? If you feel like rinsing it down with a cold glass of milk, add an extra 100 gallons of water onto your tab. The sheer amount of water used to make



the food we eat every day can be mind-boggling.”

On average it takes about 108 gallons of water to produce one pound of corn. If that corn is then used as cattle feed, additional water is required for cleaning and processing. Factoring in feed and water, it can take around 1,800 gallons of water to produce a single pound of beef.

The major demands for water during food processing are:

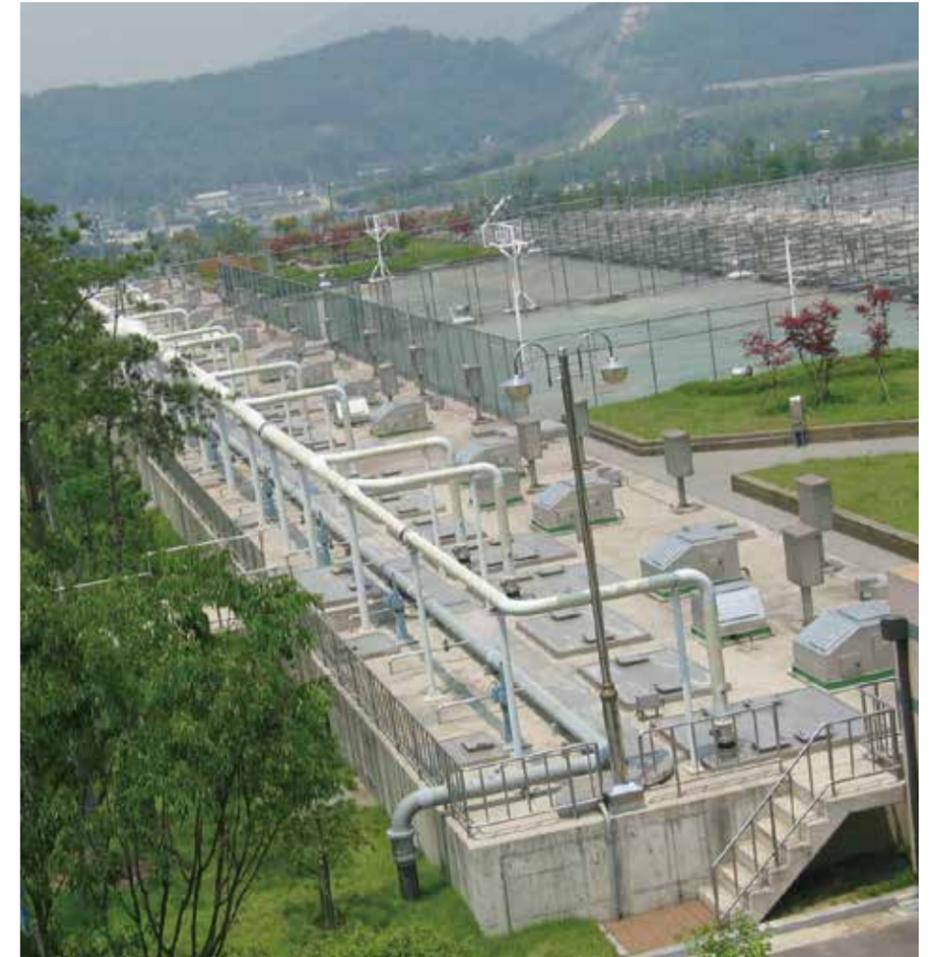
- » Washing / cleaning of (raw) products
- » Transport of products
- » Dissolving of ingredients
- » Treatment of the product (e.g. alteration, separation)
- » Provision of appropriate water content in the final product
- » Cooling processes
- » Steam generation
- » Cleaning / rinsing of equipment
- » Abnormal incidents (e.g. fire protection)
- » Sanitation.

The problems caused by pressures on water supplies mean that the food industry is being forced to consider both more efficient uses of water and alternative sources of water. It is also necessary to minimize the use of water in both production and processing, and this will inevitably lead to reuse of water in both.

In food processing a broad range of possibilities exist with regard to water management, including increased efficiency of water use and the promotion of water reuse. The latter can be made more efficient by tailoring the water quality requirements to the particular process.

Water and Wastewater Usage

Traditionally, the food-processing industry has been a large water user. Water is used as an ingredient, an initial and intermediate cleaning source, an efficient transportation conveyor of raw materials, and the principal agent used in sanitizing plant machinery and areas.



Although water use will always be a part of the food-processing industry, it has become the principal target for pollution prevention, source reduction practices.

In food processing plants, water is used for many purposes. Its use starts with conditioning raw materials, such as soaking, cleaning, blanching, and chilling. It continues with cooling, sanitizing, steam generation for sterilization, power and process heating, and finally, direct 'in-process' use. The water classification categories used in the food and beverage industries are: general purpose, process, cooling and boiler feed.

Sanitary conditions have always been a concern for food products created in the manufacturing process. Disinfection through chlorination has been the quickest means of disinfecting wastewater. Disinfection has come

under criticism due to chlorination byproducts and toxicity concerns that residual chlorine pose to aquatic life. The two principal means of disinfecting wastewater without using chlorination are ozone disinfection or UV disinfection. Ozonation works on the same principle as chlorination but leaves no residual in the treated wastewater and does not produce the magnitude of disinfection byproducts that chlorination produces.

UV disinfection is even more environmentally friendly than ozone but requires more space and cleaner wastewater to be effective. Both technologies require high capital and operating costs.

General Purpose Water

This water includes all water used in washing and sanitizing raw materials,

processing equipment, plant facility and ancillary equipment. It is used in the largest amounts and it should be potable, clear, colorless, and free of contaminants that affect taste or odor. In-plant chlorination is usually the only treatment required.

The main advantage of in-plant chlorination of general-purpose water is the reduction of microbial number on raw materials, prepared products, and on equipment surfaces in the plant. There is no action as important to food and beverage processing as control of microorganisms.

Chlorinated water is often used for direct rinse of raw material or prepared products. When this is done, precautions must be taken to ensure that the flavor of the finished product has not been adversely affected

Process Water

Water used for cooking or added directly to the product must be potable and must be of sufficient quality not to degrade product quality. This includes being free of dissolved minerals that make water excessively hard or affect taste.

Most of the product in beverage production consists of process water, so treatment to achieve taste objectives is especially important. Often, treatment beyond that required to meet safe drinking water standards is essential for consistent high quality.

Treatment processes used in bottled water often include softening, reverse osmosis, and deionization. Many other beverages would require similar treatment.

Hard water contains minerals the can

affect the texture of the raw materials to be processed, such as certain vegetables. Iron, manganese or sulfate can have an undesirable affect on the taste of the product.

Water softening might be required to prevent the formation of deposits on the surfaces of equipment, and canning and bottling materials. The type of food process determines specific quality requirements of the water beyond being potable.

Prior to its use in food processing, water must be microbiologically safe (free of bacteria, virus, protozoa cysts, and worms). Methods to remove suspended matter greatly reduce microorganisms, but terminal disinfection provides an essential added barrier.

The methods used for terminal disinfection include chemical, thermal,

radiation, and ultrasonic treatment or cell disruption. Chemical treatment with chlorine or chlorine derivatives is the least expensive and most common process.

Cooling Water

Cooling water not in contact with food products or sealed containers does not have to be potable or meet the requirements of process water. The removal of staining minerals and odors is not as important. However, preventing the accumulation of scale in pipes and equipment is important, especially when cooling water is recycled.

The most efficient processing systems include recycling circuits to reduce cooling water waste, thus reducing processing costs. Potable water, even from public supplies, often has to



receive additional treatment such as softening to avoid scale and deposits to be suitable for cooling.

Boiler Feed Water

Boiler feed water requires the removal of hardness. This may be the only treatment process applied to the water. If this water is not in contact with food, it does not have to be potable. Boiler feed water for high-pressure boilers requires the removal of all dissolved solids or demineralization. Almost all-potable water must have minerals removed through additional treatment to be suitable for boiler feed.

Not only can microorganisms produce color and odor in water, but also if they are introduced into the production process, they can contaminate the equipment and finished product. Process contamination could damage and spoil foodstuffs. If pathogenic bacteria are introduced in the contamination, food poisoning could occur.

When water is used as a food

ingredient, its quality can affect the properties of the food, including texture, shelf stability, appearance, aroma and flavor.

As a processing aid, water may be used for conveying, heating, cooling, rinsing, dissolving, dispersing, blanketing, diluting, separating, steam generation and other activities. In each case, purity of the water will affect its performance. Cleaning activities in the food industry involve the use of water as a carrying agent, dispersant, solvent and diluent.

Water Sources

The two primary sources of fresh water are surface and ground water. Food processors generally obtain water from municipal sources or owned wells. Knowledge of the water source and how it was obtained will help to indicate any required in-house treatments. Surface waters are from rivers, lakes and reservoirs, and may have higher levels of suspended materials, turbidity, temperature fluctuations and mineral

content. Ground water from springs and wells tends to be high in dissolved minerals, with a relatively constant temperature over time.

Water Quality

Impurity of water is identified and measured in three basic categories: qualitative, general quantitative and specific. Qualitative identification, includes turbidity, taste, color and odor, and describes obvious conditions of water. Most qualitative measures do not describe the concentration of the contamination and do not identify the source. It should be noted, however, that taste, color and odor evaluations may be very accurate qualitative measurements that can be rapidly completed.

Water scarcity is a key concern for the food and drink industry, as disruptions in operations due to water availability, increases in water expenses and other adverse water-related impacts would be detrimental to the industry's competitiveness.

Water Usage

As Food Drink Europe's (www.fooddrinkeurope.eu/) Environmental Sustainability Vision towards 2030 points out, the food and drink industry has shown leadership in its voluntarily actions to reduce water use, as the quality and quantity of water available is critical for the sector's sustainability. A certain amount of water use is unavoidable for the production of food and drink products and to ensure compliance with stringent EU hygiene requirements, as food safety and hygiene are of utmost importance.

"While the Europe's food and drink industry already leads in the field and "water footprint" is minimal (1.8% of total private sector use), producers across the world have strived to further reduce their water use and better manage water resources from factory to final product. Leading companies are already reporting measurable achievements in improving water efficiency.

Actions include developing and using water consumption monitoring tools, rainwater harvesting, installing

water recovery and recirculation systems, modifying cleaning and housekeeping practices, preventing and stopping water leakages, using sensor-controlled taps or hand-controlled triggers on hoses, using low volume high pressure water jets, redesigning processing techniques to reduce water use and staff training.”

A 2012 report from sustainable business analyst Verdantix, titled The State of Global Corporate Water Strategies, was compiled after interviewing senior executives in a number of \$1 billion or greater firms from different sectors in 10 countries. Verdantix found that formal water strategies are becoming more common. In water-intensive industries, about 90 % of businesses report having a formal water strategy.

The numbers are lower in non-water-intensive industries, but are still substantial: about 60 %. In water-intensive industries, about 93 % of companies issue formal reports about their water usage and conservation practices, as do about 77 % of companies in lower water-intensive industries.

Companies are realizing that as water becomes scarcer in places they manufacture, wasteful production methods present a danger to operations, particularly if local governments turn off the tap or put huge surcharges on water use. It's in the businesses' best interests to put some water conservation programs into place now and wean themselves off wasteful processes in favor of more water-conserving production methods.

To that end, according to the study, companies are using water metering and other technology solutions, such as water accounting; water-footprinting tools and product lifecycle assessment (LCA) software that helps them outline the environmental impact of their products and processes.

Suggestions for Improvement

The changing climate with more frequent extreme weather events requires today's businesses to plan for an unpredictable and inconsistent water supply via more sophisticated water management

practices, according to a new report released on April 15th, by the World Business Council for Sustainable Development (WBCSD). The report, Sharing Water: Engaging Business emphasizes the crucial role of business in ensuring responsible management of water resources and encourages greater collaboration across sectors. The report finds that leading companies have begun shifting their perspective beyond merely managing operational water use to becoming more conscious of how corporate actions impact local and regional water resources and, conversely, how water resources and watersheds impact business.

“Increasing global demand and the impacts of climate change are placing unprecedented strain on freshwater resources,” said WBCSD President Peter Bakker. “In order to ensure a viable business future, companies are calling for collective management and collaboration at the watershed level to ensure continued access to water supplies

among competing demands.”

Water conservation groups say there is room in every step of the manufacturing process for improvement, whether by changing or modifying machinery to use less water, switching to waterless processes, or treating and reusing water. It's a daunting prospect, and should begin with a comprehensive review and planning strategy.

Keep track of water usage

Many manufacturers today don't track their water consumption, which should be the first step of reducing its use. Companies can begin by implementing a water auditing system that reviews the life cycle of water in the plant from intake to discharge. An audit should track primary uses, and also secondary uses, such as wash water, irrigation water for landscaping, and water used in restroom facilities. It should include where the water is used, what quality it needs to be, and where savings opportunities might exist. This can be



accomplished by sub-metering of water, or breaking out each water-using process and measuring precisely how much is used.

Build a water management strategy

Once a company knows how much water it uses, it can begin to set specific targets for reduction and plan how to achieve them. This strategy should be reviewed at least once a year to ensure that it accommodates changing business needs.

Determine the areas where wastewater can be recaptured and reused

Chances are, not every water-based process requires fresh water: so-called

“gray water” will do just as well for the purposes of cooling, rinsing, boiling, or flushing. There are benefits to such a switch beyond cutting water use. By reducing water discharge, companies may be able to minimize regulatory and discharge fees.

Recover waste heat instead of dousing it with water

One of the most common uses of water in manufacturing is for cooling hot machinery.

Conversely, one of the easiest ways to reduce energy consumption is to recover waste heat and use it to heat the facility. Moving to a waste heat capture (or “cogeneration”) system can reduce both water usage and energy costs.

Invest in on-site water treatment

Rather than discharging used water and pulling fresh water from municipal systems, many companies have turned to treating wastewater on site to prepare it for re-use, in some cases using relatively inexpensive carbon filtration.

Recover water from steam boilers

Another common use of water in manufacturing is for boilers to generate steam. There is great potential for water loss here as the water turns to vapor and escapes the system. Many eco-minded companies are recapturing steam in heat exchangers designed to collect the condensate and return the water to the boiler.

2013 KEY POLICY DIRECTIONS

The new administration of President Park Geun-hye has recently announced its policy directions for this year. The following is a summary of the main components.



The administration's economic policies for 2013 are aimed at boosting the real economy and promoting 'creative economy' as a new source of growth engine. The government will help boost employment by improving the economy through the adoption of aggressive macroeconomic policies, and creating an environment where "the creative economy" can flourish. The government will also improve regulations in a more employment-friendly way.

The administration's economic policies for 2013 continue to prioritize supporting low- and middle-income families by maintaining low inflation and through tailored welfare programs, which range from micro-financing to housing and education support.

The government will pursue economic democratization through fairer and more transparent markets, and protect economically vulnerable groups.

To more efficiently manage risks in such volatile domestic and global situations, the 2013 policies incorporate reinforcing crisis response systems and improving risk management.

The government will improve its fiscal situation in order to successfully implement the new administration's priorities and set up procedures to facilitate intra-governmental cooperation.

2013 Policy Directions of the Park Geun-hye Administration

Aim	Economic Recovery and 'Creative Economy' Promotion			
Key Policies	Employment Growth	Better Living Conditions	Economic Democratization	Strengthened Risk Management
Tasks	Aggressively managing macro-economy	Stabilizing prices	Promoting fair competition	Reinforcing crisis response system
	Boosting both exports and domestic demand	Increasing micro-financing and easing housing and education burdens	Requiring transparent and responsible business management	Adopting risk factor management
	Adopting employment-friendly regulations	Developing tailored welfare programs	Protecting the economically vulnerable	
	Providing an environment that creates the 'creative economy'			

Major Policy Tasks

Job Creation

The government will actively manage macro-policies and foster economic conditions that will promote increased domestic consumption and export growth. The government will construct an employment-centered economic system that will lead to a virtuous cycle of growth and job creation. Infrastructure will be built that fosters a 'creative economy', based on science and IT, and led by SMEs and venture businesses.

Active Macro-Policy Management

The government will exceed its target to frontload 60% of the budget in the first half of the year and the working classes will be supported through supplementary spending. In April the government will work on devising supplementary budgets and changing fund management plans in order to support the working class, promote economic recovery and preserve revenues. The government will contribute to a recovery in middle and long-term fiscal soundness through economic revitalization. Investments in public institutions will be expanded by 1 trillion won mainly through SOC areas.

The Bank of Korea will strengthen its Aggregate Credit Ceiling Loan support

for SMEs and exporters that are having difficulties with financing and other policy funding programs will be expanded.

Financial support will be strengthened for the working class and measures, such as 'house poor support' and the 'People's Happiness Fund' will be prepared to relieve the household debt burden.

The government will respond to any volatility in foreign exchange markets caused by advanced economies' quantitative easing programs. The government will seek to strengthen international cooperation through various channels, such as the G20, in order to minimize the negative effects of advanced economies' monetary policies on the Korean economy.

Fostering Domestic Demands and Exports

Growth will be boosted by revitalizing investment and consumption. In May, the private and public sectors will jointly prepare for the measures to improve the investment climate.

In order to revitalize foreign investment, various measures will be prepared also in May such as employment-friendly incentive reforms, expansion of immigrant investor program, and exemption of tax on intra-transaction

profits of foreign investment enterprises (Foreigners' ownership is over 50%). Working class income will increase through SME worker support and a reasonable minimum wage.

SME and service industry-centered export support will be strengthened. Export financing will be frontloaded by 60% during the first half, and SME's capacity to fight intellectual property rights disputes will be boosted. In April, measures to support export SMEs that are vulnerable to exchange rate volatility will be prepared. A report on trade barriers for services will be published in September and foreign tourist administrative expediency will be improved. The 'Trade Investment Promotion Meeting' will be held quarterly to conceive the measures to vitalize exports.

Financing support for home buyers will be expanded and tax burdens, such as the acquisition tax and transfer tax, will be relieved, and housing regulations will be eased.

Improving Employment-friendly Systems

The government will push ahead with major projects and policies from the perspective of job creation. A middle-term 'Job Roadmap' will be prepared



to achieve 70 % employment and results will be monitored through the 'Job Recovery Meeting.' The evaluation results of impacts on employments will be actively utilized in the major fiscal projects' formulation and execution and an employment-friendly tax system will be prepared.

Jobs will be created through public sector job creation and by providing employment support for businesses. Employment-friendly systems will be improved, including improving working conditions for women. Public sector jobs and public institution recruitment will be expanded from 15,000 to 16,000 people throughout the year and jobs will be created by promoting connections between local governments, universities and businesses. Pregnancy and childbirth-friendly policies will be prepared and female-owned businesses support reforms will be promoted and measures to improve conditions for long-hour workers, such as rolling-over hours worked, will be prepared. The

'Comprehensive Job Information Network' that links together public and private sector job information will be built.

Laying the Foundations for a 'Creative Economy'

The government will promote a positive environment where entrepreneurs are unafraid to start businesses, even though they may fail, and try again in the event that they do.

Measures to support new businesses and ventures at each stage of the life cycle will be prepared in June

At the business creation stage, the government will encourage expanded investment in new businesses. In order to induce adventurous investment by the private sector, public institutions such as Fund of Fund and Korea Finance Corporation will share more investment risks through test-building the 'Korea Future Creation Fund'. Conditions for the financing of new businesses will be improved through the introduction of cloud funding programs.

At the withdrawal stage, the market will be vitalized for early investors who wish to sell their stakes in businesses. Tax support will be expanded to promote mergers and acquisitions of technological innovation SMEs and the KONEX market, which can only be accessed by SMEs, will be established.

At the try-again phase, financial burdens from past failures will be eased, including burdens owing to joint sureties, and comebacks will be supported. Joint surety burdens will be eased by abolishing nonmonetary institutions' joint sureties and postponements will be granted on delinquent taxes for people trying to start another business.

Support for creative service industries will be increased to the manufacturing level to foster a creative environment.

Measures to develop service industries through IT utilization and R&D invigoration will be prepared in May. Support will be greatly increased for R&D investment-related taxes and budgeting to expand creative human

capital, the core competency of creative service industries. Tax exemptions for creative service industries, tax credits for SME investment, and start-up support, will be introduced. Corporate taxes will be cut for sales of SMEs arising from technological transfers such as patents. Exports by creative service industries, such as the MICE industry, will receive the tax support and financing that other merchandise export industries receive.

Supporting the Working Class

The Korean government will stabilize prices, alleviate financial, housing, and educational burdens and strengthen customized welfare support.

Price Stabilization

The government will focus on stabilizing prices by taking a structural approach by improving distribution structure, and will abolish the current item-by-item price management scheme as well as strengthen the market monitoring function of the private sector.

The government will work with relevant private sector industries to come up with a comprehensive distribution channel improvement plan which will cover agricultural products and monopoly-oligopoly item distribution. It will also ease the regulations on petroleum and telecommunication market entry, and promote constructive competition among market players. The government aims to ease working class burdens through supply management and improved transparency. The government will tackle the tightened agricultural goods supply through various measures including contract farming and stock-ups, and develop a reasonable cost verification system for public utility fees by revising the fee calculation criteria.

Easing the Financial, Housing, and Educational Burdens

The government will ease the debt burden of the working class and improve lending. The government will allow debtors to write-down their debt or have

it consolidated into a lower interest loans through a program called the 'People's Happiness Fund.' The government will increase its efforts to help debtors with multiple loans repair their credit and will organize the lending system for the working class in May.

The government will increase public rental housing and strengthen its support for house rent loans. The government will fully cover the cost of care and education of toddlers and lower the tuition burden of college students from low-income families through various scholarship offerings. Regardless of their income level, parents of toddlers aged 0-5 will be eligible to apply for financial support for early childhood education, or receive a toddler care allowance.

The government will offer national scholarships and working scholarships to more people and lower the burden to college students paying for university by offering 'customized national scholarships aligned with to the beneficiary's income level.'



the 'People's Happiness Fund.' The government will increase job creation for the elderly, and strengthen the care for senior citizens living alone by utilizing public and private welfare funds

The government will also develop effective and efficient welfare channels to deliver welfare services. Local community centers will be transformed into customized welfare hubs for integrated welfare services including benefit application, case management, and employment alignment. The criteria for selecting participants for various welfare projects will be standardized.

Economic Democratization

The Korean government will provide a fair and transparent economy to ensure equal opportunity and fair compensation, and protect the economically weak, such as consumers and SMEs.

The government will strengthen insider-trading laws and conduct a comprehensive reorganization of related laws and regulations to be able to implement policy more efficiently.

The government will also strongly regulate large corporations to prevent personal gains by fraud by easing the conditions that constitutes unfair assistance. Fair Trade Commission will no longer have exclusive rights to file complaints and the government will



consumer damage relief and consumer competency.

Strengthen Risk Management

The Korean government will establish a crisis management system, and manage individual risks, such as household debt.

The government will act as a control tower, and facilitate intra-governmental cooperation and public-private cooperation through the ministerial meeting on macroeconomy and finance, and public-private meetings on market situations. Risks will be managed according to contingency plans in order to prevent market uncertainties, and government responses will become more extensive, covering the real economy, finance and foreign exchange.

The government will closely monitor household debt, the real estate market, capital flows, corporate debt, and the yen.

The size of household debt will be strictly managed. There will be improved supervision of nonbanking lenders, and the government will adopt early warning systems. Real estate market monitoring will be focused on identifying volatilities in the market, as it is harmful to macroeconomic soundness. Macro-prudential stability measures, including the macroprudential stability levy, caps on banks' foreign exchange forward positions and taxes on foreign investment in local bonds, will be reintroduced if necessary.

There will be more systematic monitoring regarding the yen exchange rate and its effect on domestic industries as well as domestic financial and foreign exchange markets. SME exporters will be able to access increased liquidity, and foreign exchange risk related insurance will receive increased government support. The government will require highly indebted companies to undergo restructuring.

Strengthened Welfare

The government will develop a customized basic livelihood security system that monitors people who receive livelihood assistance and potential welfare recipients to help them move up to the middle class.

Current integrated pay systems will be reconfigured and customized to provide a living wage and housing benefits.

Potential welfare recipients will be expanded to include those who earn 50% of the median income level and the criteria for persons obligated to support will be improved.

The government will build a welfare system which benefits people who work. It will enlarge the scope of people eligible for earned income tax credit, raise the tax credit and allow even those on livelihood assistance access earned income tax credit by aligning it with the revised pay system. The government will also increase social insurance support for low income workers and expand the eligibility for access to IDA from current employment benefit recipients to those who take part in self-sufficiency projects and potential welfare recipients

The government will promote the public health by implementing disease prevention measures and expanding health insurance coverage for critical

diseases. The government will allow health insurance to cover medical services essential for treating critical diseases and come up with ways to practically ease the financial burden of patients after conducting a comprehensive study on hospital expenses.

The government will also augment disease prevention and health promotion of national clinics and develop responses to addictions, such as alcoholism.

The government will offer universal social security to the elderly. The elderly will receive income support through



introduce punitive damages and will bring class action lawsuit claims against any business that violates of the fair trade laws and regulations.

The government will improve the governance structure of conglomerates. The government will also ban any new cross-holdings by subsidiaries and strengthen the voting rights of public pension funds provided that their independence is ensured. The government will take a phased approach toward making e-voting systems a mandatory and introducing multiple derivative lawsuits.

The government will root out any unfair practices by conglomerates that exploit their economic superiority and

prevent those conglomerates from edging into the business areas of SMEs and small merchants.

The government will improve unfair trading practices such as transfer of foreign exchange losses and levying excessive sales incentives, set up a new provision prohibiting unfair terms in supplier contracts, and recognize mid-sized companies as subcontractors. The government will broaden the business areas appropriate for SME in the service industry from their current livelihood-centered service to other service areas, and shorten the business adjustment period from a year to less than two months The government will strengthen the structural foundations for

i Source: Ministry of Strategy & Finance (<http://www.mosf.go.kr>)

ACCELERATING INNOVATION



NIZO food research was founded as dairy research institute in 1948 by the Dutch dairy industry. In an exclusive interview to us, Dr. Ad Juriaanse, Managing Director and Dr. Liz Kamei, Vice President of business development for Asia Pacific discuss the key objectives for this year, and plans for Korea.

Dr. Ad Juriaanse did a PhD in Biochemistry. He worked for 14 years for Unilever in the Netherlands and the United Kingdom in different positions in both R&D and operating companies. Since 1995 he is managing director of NIZO food research.

Dr. Liz Kamei obtained her PhD in biochemistry in the UK and then went to work as a research scientist for Kirin Breweries, a Japanese beverage company. She transferred to Gunma University where she worked as associate professor in the Faculty of Engineering before returning to a business position in the UK. Liz has worked in business development and open innovation roles, mainly focusing on the Asian-Pacific food & beverage markets.

She is fluent in Japanese and is currently learning Korean with the aim of creating good working relationships with our friends in the Korean food & beverage

industry. At NIZO, she is the Vice President of business development for Asia Pacific.

Ad: It is a pleasure to speak about NIZO and our aspirations for developing our business within Korea. It is my role to oversee NIZO's activities on a global basis, and Liz is leading our business activities in Asia-Pacific. I am inviting Liz to comment in this interview as it is our hope that our friends in Korea will see her as the point of contact for NIZO and will reach out to her to discuss their innovation ambitions and objectives.

What are the key objectives of NIZO this year, in terms of expanding operations?

Ad: Our overall objective is to carry on being relevant to the global food industry by maintaining our cutting edge



capabilities and evolving as an organization so that we are always a key part of food innovation networks. Liz, what do you have to say about our activities in Asia-Pacific?

Liz: Our ambition for Asia Pacific is to really understand the innovation needs of our current and potential partners and provide the best match of NIZO expertise to meet those needs. That expertise might be flavour, texture, gut health food safety or process optimization – it depends on the needs of the client. My personal aim is to act as an initiator of relationships that lead to co-creation and breakthrough innovations.

What are the competitive advantages that NIZO offers?

Ad: NIZO is an independent research company that assists the food industry with their innovations and optimizations on a project basis giving maximum flexibility to the client. We are convinced that good food needs good science and that can be achieved by working together intimately with our clients on those things that are relevant to their business. As a hub of food science expertise, working with NIZO gives our clients access to the latest science and technology. We believe it is important to stress that IP generated during projects belongs to the client.

Our experts have a variety of backgrounds - both academic and industrial – and they understand the needs of industry. In addition, our understanding and expertise has grown as a result of the many successful projects carried out for food and ingredient companies over our 65 year history. Thus, NIZO also serves as an excellent gateway to the European markets.

Liz: I would emphasize the fact that our scientists have a broad range of experiences gained from different organizations. As you may know, innovation happens when a diverse set of skills and experiences are brought together to create something new. In addition, our scientists all have their own personal networks into industry and academia – they span the

boundaries of our organization – and that also amplifies the opportunities to innovate. This really illustrates the importance of being part of diverse networks –and it is something that is not easy to replicate in other organizations.

What are your plans for operation in Korea?

Ad: Liz has the overview of our ideas for Korea, so I will let her answer.

Liz: We realize the importance of building the business relationship and understanding our client's needs and ways of working. We welcome the opportunity to learn how to best work with you.

We are considering opportunities in the near future (2014) to take NIZO experts to Korea and to run one of the well-respected NIZO technical courses. This will be a learning opportunity for NIZO, and a chance for potential clients to

interact with our experts and learn about NIZO. Our experts are of course available for consultancies, depending on the needs of Foodpolis in general and specific companies in particular. We welcome the chance to discuss potential opportunities with our friends in Korea.

Any thoughts on FOODPOLIS, the Korean government initiative to develop the food industry in Northeast Asia?

Liz: The incredible progress made by Korea in other technical fields is well known and we expect that this initiative will be backed by the same dedication and energy. We are excited by the future of Foodpolis.

Ad: All I can add is that we are delighted to be invited to attend the 3rd International Food Cluster Forum and have the chance to visit the site of Foodpolis.



Together with the experts of the companies we work with, we accelerate innovation by developing and implementing new technologies to improve flavor, texture, health & safety and optimize processing conditions. NIZO technology is also used for cost reduction projects in recipe formulation and process optimization,”

The food grade pilot plant is used by industry for up scaling of R&D projects as well as production of small volume ingredients and samples for clinical trials, test market etc.

NIZO is specialized in “open innovation systems” in which NIZO works closely together with individual companies on a confidential basis.

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NIZO FOOD RESEARCH

NIZO food research is one of the most advanced, independent contract research companies in the world.



- 1 NIZO HQ
- 2 NIZO cheeses
- 3 NIZO food grade processing Centre

NIZO was established in 1948 by the joint Dutch dairy industry to meet their needs for food safety & quality control. At the time, the dairy industry consisted of a large number of small companies that had the common aim of improving the quality of their products.

It was not long before NIZO started to work on innovations for the Dutch dairy industry. Cheeses such as Kernhem, Leerdammer and Parrano, which are now found in supermarkets throughout Europe, were innovations that came out of NIZO. Also new processes such as the NIZO butter process and the continuous cheese process were developed in Ede.

In the early days, NIZO worked exclusively for the Dutch dairy industry, but over the years this has changed as NIZO evolved to meet the changing needs of the food industry. With the consolidation of the Dutch dairy industry, and with only a

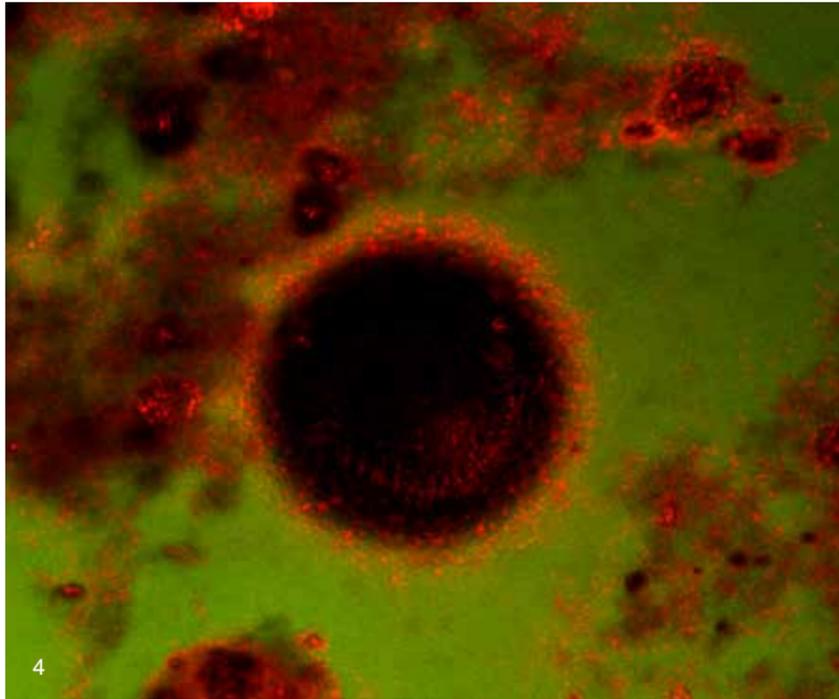
few major players remaining, cross-industry research was overtaken by competitive research undertaken by each individual dairy company.

NIZO realized that its expertise on food physics, microbiology and food processes could also be applied to a broad range of foods and ingredients. In the mid 1990s, NIZO changed its name to NIZO food research to emphasize the expanding scope of its research activities. Since then, NIZO has developed and applied technologies to innovate a wide range of food products: from ketchup to coffee and from infant to clinical food. NIZO also owns and runs its own food-grade pilot plant, which is the largest publically available food pilot plant in Europe. This enables NIZO to work with clients to take food innovations from the bench level through to scale-up work. The pilot plant and associated processing center are used for

a number of purposes besides scale-up trials. Clients also use NIZO when they do not have the in-house capacity to produce a new product, or they want to test the European market for their products. NIZO also works with clients to trial new processing techniques.

In 2003, with the agreement of the Dutch dairy industry, NIZO food research became a private company and expanded its operations to work for the international dairy industry in addition to the international food, beverage and ingredient industries.

NIZO became a fully independent food research company in 2009, when the current management team agreed a management buy-out from the Dutch dairy industry stakeholders. Since then, NIZO has been a totally independent company, and it does not rely on industry stakeholders or government for funds.



NIZO's current CEO is Dr. Ad Juriaanse, an experienced food industry scientist and business professional who has led NIZO since 1995. Since becoming a private company, NIZO has gradually broadened its international operations. In 2005, NIZO established offices in France, the UK and USA, and it made its first step into Asia-Pacific with the establishment of an office in Japan in 2007.

NIZO has been able to expand its international operations by ensuring that the work it does is always cutting edge and relevant to the food and beverage industry. For this reason, NIZO invests heavily in ensuring it attracts and retains high quality scientists. Many of the NIZO scientists spent time in global food & beverage companies earlier in their careers and are well aware of the constant pressures of time and budget that the food industry faces. Their understanding of the way of working within industry, and NIZO's emphasis on ensuring our project managers have good project management skills, means that NIZO ensures that projects are run on time and efficiently – so that when the final results are given over to the client, they are still of relevance in this fast-moving world.

In addition, NIZO taps into emerging technologies through its participation in a number of food research consortia, such as the Top Institute for Food & Nutrition in the Netherlands and a number of EU-run consortia focusing on topics such as specialist nutrition for infants, seniors and elite athletes, novel food processing techniques and novel foods. Through participation in these basic research consortia and as a result of some of our scientists having a dual role as university academics/professors, NIZO is able to bridge the worlds of academic and applied research. These activities are important to maintain NIZO's position as a provider of cutting edge technology and knowledge, and applying this to ingredients and foods.

Of course, the reputation that NIZO has already built up during its 65 year history of activities also helps create opportunities for new business. Its global business has also expanded as European contacts recommend NIZO to their

subsidiaries or parent companies overseas, but in recent years NIZO has shown its commitment to growing internationally by employing business development managers to focus on key markets in Europe, the USA and Asia Pacific.

NIZO's position in the global market has been strengthened by the way it works with clients. In addition to managing research on a project basis with clear deadlines and objectives, the ownership of intellectual property (IP) generated as a result of the research is clear from the start – IP generated during a project belongs to the client. Of equal importance to NIZO clients is the high priority given to client confidentiality. Unlike universities and other public research institutions that

are under pressure to “publish or perish”, NIZO scientists do not publish any client work unless the client wants to put the information into the public domain. Of course there are many occasions where clients are happy to publish research papers with their NIZO collaborators.

So, how does NIZO see its international future? This can be summarized in one word - “together”. As CEO Ad Juriaanse says, “Our clients are in the business of R&D themselves, they like to solve puzzles. We can help them by working together as one team. We strongly believe in this approach.” As more and more companies realize that “the world is my lab”, they seek co-creation partners that not only bring new

insights and expertise, but also provide access to novel networks of innovators. NIZO's vision is to ensure that it remains a hub in the international network of food innovators and that its staff constantly has a mindset of “working together, wherever the client is.”



4 IceCream

5 NIZO tour during MOU signing Foodpolis

6 Virtual product development and taste delivery

NUMERO UNO



CJ CHEILJEDANG Corp., South Korea's largest food & Bio company started out as a sugar manufacturer in 1953, amidst the ruins of the Korean war. It has since expanded its operations, and constantly pursued innovation and global competitiveness with a vision to become a premium international brand.



Having taken the lead in South Korea's food industry for the past 60 years, CJ CheilJedang is strengthening its position as the number one in food, pharmaceuticals, biotechnology and animal feed in the domestic market.

With its consistent growth and continuous challenge, the company seeks to become a global food & bio company. It has set a target of 10 trillion won in sales this year, and increase the % age of sales abroad to half the overall sales.

The following gives you a brief snapshot of each of its core food business (excluding its successful pharma and bioscience business) and plans for global expansion.

Food Ingredients

Besides sugar, CJ CHEILJEDANG has continuously produced a variety of food ingredient products, such as flour and cooking oil that has allowed it to improve the dietary life of the nation and to lead the food industry of South Korea. The company has completed its sweetener portfolio of its manufacturing arm by adding to sugar the oligosaccharides, Xylose and Tagatose which are low-calorie functional sweetening agents.

These oligosaccharides improve the blood sugar level and help treat intestinal disorders and were developed using the company's technological power and long-term research. Such new developments are putting CJ CHEILJEDANG in the

lead in the field of global sweetener manufacturing and supply.

CJ CHEILJEDANG is also involved in the field of flour manufacturing where it is launching diverse pre-mix products, such as muffin mix, cookie mix and the potato mix "Sujebi" which has a traditional taste, to satisfy modern housewives and their families whose dietary habits are becoming westernized. Hoddeok mix and cup cake mix are additional products that contribute to spreading the 'homemade' culture in Korea. Finally, there are the Korean wheat flour products that are released to protect and develop Korean wheat farms and which are receiving favorable responses from consumers.

Oil is another field where CJ CHEILJEDANG is launching premium product such as Olive Oil, Grape seed Oil, Canola Oil and Rice Brain Oil under the brand new BI of BEKSUL in the cooking oil market, which had been mainly taken by Soybean Oil. Moreover, it is the first company to have successfully developed Trans Fat Reduction Technology that utilizes Enzymatic Techniques, which led them to introduce Trans Care products into Oil Market. The company has additionally succeeded in developing and commercializing the ONLY ONE products based on 'Health, Convenience, Pleasure' that CJ group is pursuing as a group's core value. It is also leading the B2B market, by developing exclusive oil, which is highly customized and differentiated in

formula only for each franchise with its great capability in R&D.

Rather than being content with the current position of being No. 1 in the domestic market, the differentiated technological prowess of CJ CHEILJEDANG is paving the way for a successful high value-added, functional materials business that offers functional sweeteners, specialty oils, pre-mixes, rice-processed products and food ingredients that improve the dietary life and culture for Koreans. To develop in the overseas markets, it has also started production bases in China and the Philippines.

Food Products

CJ CHEILJEDANG is introducing a variety of high-quality products for the 21st century that use Korean food materials and escaping the conventional framework of instant and processed foods. Leading the competition in the instant cooked rice market with the Hetbahn brand, CJ CHEILJEDANG has launched Germinated Brown Rice as well as Multi-grain, Black Rice and Nutritional Rice (Hetbahn) products that have received positive responses from the processed food market.

In addition, the company is contributing to the spread of Korean food culture globally by actively exporting products including Indeli that is targeting premium curry products. CJ CHEILJEDANG continues to sail smoothly in the dessert and snack market after launching Matbam, a sweetened chestnut product, following 'Petitzel', which started a new trend in the snack market.

It is enhancing consumer pleasure with Fresian, the representative fresh food brand that is created with fresh and delicious ingredients. CJ CHEILJEDANG has been continuously launching products created with fresh ingredients including The Healthier Ham made with high-quality pork containing zero additives, and Gatsuo Udong which has a rich broth and dumplings and is made using fresh vegetables and pork.

In addition, CJ CHEILJEDANG is gradually expanding its business activities in fresh foods with Happy Bean, a tofu

made using only domestically grown soybeans and natural brine and marine products that provide the healthy and delicious taste of the sea. Tofu and dumplings have in particular been popular when exported to overseas markets and therefore are being recognized as the taste of Korea, and their export is a representative project of CJ in China and in the West.

Feed & Livestock

Since the release of the first product in Busan in 1973, the Feed BU of CJ CHEILJEDANG has successfully partnered with customers and brought forward products and services that are leading the industry. The 2 plants in Korea (Incheon and Gunsan) produce not only general animal feed for pigs, domestic cows and chickens, but also special feed for fish farming and pet animals.

The flagship brands include Perfect Meister for pigs, Aminotech for domestic cows, Biotech for chickens, Marinetech

for fish and Pet Food & Fresh for pet animals. In addition to the feed business, the Feed BU OF CJ CHEILJEDANG is leading the market with differentiated business models including the systemization of pig farming. The strength of Feed BU lies in its having the best R&D technology and personnel in the industry.

The Incheon Plant was the first in the formula feed industry of Korea to obtain HACCP certification from the Ministry for Food, Agriculture, Forestry and Fisheries and therefore served as the building block upon which HACCP standards were established for feed plants. Moreover, ISO international standard procedures certification was granted to the plant, and KOLAS was awarded for the first time in the industry for the category of research center analysis, which increased the accuracy of analysis for the entire industry.

The Feed and Animal Biosciences Research Institute is Korea's largest research center in the field and is

equipped with superb doctorate level research personnel and state-of-the-art analysis equipment. The research center conducts R&D specific to each species of animal and focuses on the development of functional feeds, new feed materials and advancement of technology. Building the R&D center in Syenyang, China was completed in June 2012 and there will be also the R&D center established in Vietnam in 2013.

Global Operations

CJ CHEILJEDANG entered the overseas markets for sugar and MSG in the 1960s and thereafter has continuously promoted processed food exports throughout the 1970s when it targeted Koreans living abroad in the U.S., Japan and China. In the 1980s, products using nucleotides, lysine and antibiotics as ingredients were added to its global repertoire and, accordingly, CJ CHEILJEDANG gradually increased the scope of its overseas business. In particular, Bio and Pharma were the areas CJ CHEILJEDANG most extensively focused on entry into overseas markets. CJ CHEILJEDANG entered the Indonesian market in November 1989 for the purpose of expanding its bioscience business. After securing a stable market for feed, chicken farming, lysine, nucleotides and MSG, CJ CHEILJEDANG then moved to Vietnam, Myanmar and the Philippines in the 1990s. CJ CHEILJEDANG plans



to add pharmaceutical production and marketing businesses to its existing feed business in these countries.

Food business, the cornerstone of CJ CHEILJEDANG, is being actively carried out in China and the U.S. In China, the local offices are performing various activities related to sales and market development for meat processing, Dashida, food ingredients, and food materials. In the world's largest market, which is the U.S.A., CJ CHEILJEDANG has been actively conducting business activities targeting Korean residents since the middle years of the 1990s. More recently, CJ CHEILJEDANG is developing and diversifying Hetbahn and seasoning products to suit the taste of U.S. consumers and therefore is actively developing the local markets there.

In order to overcome the limitations of a company catering to the domestic market, CJ CHEILJEDANG is aggressively marching forward with a plan to make the 1.3 billion people in the Chinese market into a '2nd domestic market'. As a mid to long-term plan, CJ CHEILJEDANG will increase sales to 2 trillion won within China by 2013 by expanding new product

lines to attract Chinese customers and by strengthening R&D investment.

At the same time, CJ CHEILJEDANG is actively attacking the advanced U.S. food market. CJ CHEILJEDANG acquired a local food company at the end of 2005 and secured a forward position in the U.S. With this, CJ CHEILJEDANG established a direct local production and marketing system to attack the U.S. processed food market and escape from being dependent on exports or local OEM production.

As the world's second largest feed market, China is breeding the largest number of animals and has huge potential in terms of consumption. Starting from feed production in 2002 in Chengdu, CJ's Feed BU has been producing and selling feed in Harbin, Nanjing, Shenyang, Zhengzhou, Changsha and Tianjin. Vietnam has a large domestic demand and is functioning as a bridge providing entry into neighboring countries in the future. Therefore, CJ CHEILJEDANG has since 2001 been expanding its business scope in Vietnam. The company also established a local office in the Philippines in 1996 and completed a plant in October 1997. CJ CHEILJEDANG has

been selling pigs, chicken and fish feed on the nationwide marketing network in the Philippines and has grown into one of the top 500 companies there as a result of continuous improvements and development on top of its outstanding product quality.

A local sales office was also established in Chennai, India in January 2007 and commenced the business of selling feed for prawns and expanded business area to Delhi in April 2012.

After leading the development of the livestock farming industry in Korea, CJ CHEILJEDANG's Feed BU entered the Indonesian market in 1996 to realize the company's global ambitions. 17 plants and approximately 20 breeding farms are currently (2010) being operated in 6 countries (Korea, China, Vietnam, Philippines, Indonesia and India).

More Information available on the website: <http://eng.cjcheiljedang.com/>



KIMCHI

KOREAN TRADITIONAL FOOD

Rich in vitamins and minerals, Kimchi represents Korea's best-known food, and was conceived around the 7th century. The reddish fermented cabbage (and radish) dish, either alone or mixed and as a topping on pizza and burgers.



Originally developed as a way to preserve the vitamins and minerals in vegetables over the long winter, Kimchi has been one of the most essential pillars of Korean cuisine for centuries.

Many years ago, Kimchi was merely regarded as a salted vegetable. Yet, throughout the 12th century, with the

addition of several spices and seasonings, it grew steadily in popularity. It wasn't until the 18th century that hot red pepper was finally used as one of the major ingredients for making Kimchi. In fact, the very same Kimchi as we know it today has retained the same qualities and cooking preparations that prevailed ever

since it was first introduced.

The development of Kimchi is reportedly rooted in the agrarian culture that began before the era of the Three Kingdoms on the Korean Peninsula. Due to the cold Korean winter, they had to come up with the storage technology for vegetables as a means of securing food.



Although there are records that clearly indicate the root of Kimchi's discovery, cabbage was first mentioned in an oriental medicine book titled 'Hanyakgugeupbang'. There were two types of Kimchi - jangajji (sliced radish preserved in soy sauce) and sunmu sogeumjeori (salted radish). In this period, Kimchi began to receive new attention as a processed food enjoyable regardless of season as well as storage food for winter. It is suspected that the development of seasonings at that time enabled spicy Kimchi to appear.

It was after foreign vegetables, in particular, cabbages (brassica) were introduced and used as the main ingredient that the current form of Kimchi

was conceived. Hot red pepper was imported to Korea from Japan in the early 17th century (after the Japanese invasion of Korea in 1592), but it took roughly 200 years until it was actively used as an ingredient in Kimchi. Therefore, it was only during the late Chosun period that Kimchi became associated with its red color.

Normally three types of Kimchi- whole-cabbage kimchi (jeotgukji), diced-radish kimchi (kkakdugi) and water kimchi, were served to the kings of Chosun.

Kimchi has been scientifically proven to be high in nutrition and is often recommended as a valuable food source

both at home and abroad. In fact, there has been a significant increase in Kimchi exports in recent years. In the past, the production and consumption of Kimchi was confined to Korean societies, however, in recent years it has become a globally recognized food.

It is reported that there are over 100 different types of Kimchi depending on different regions and times of the year they are made. Kimchi has a truly unique flavor. For the uninitiated, it is often much too spicy and garlicky, but once you've given it a chance, you will quickly begin to love it. The taste is a refreshing combination of briny, spicy, pungent flavorings in a cool, crunchy cabbage base.

FOODPOLIS where Innovation meets taste



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