

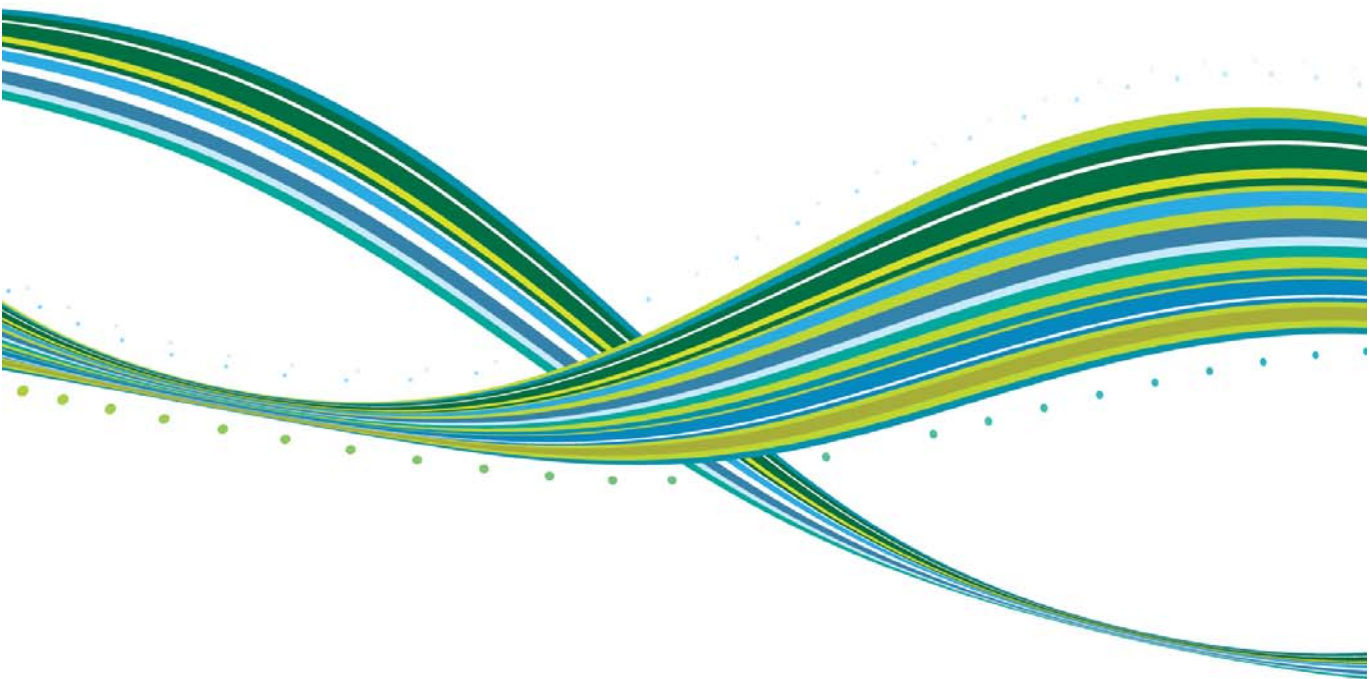
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KREI Research Summaries

Korea Rural Economic Institute www.krei.re.kr

119-1 Hoegi-Ro, Dongdaemun-Gu, Seoul, 130-710, Korea

Tel 82-2-3299-4000 Fax 82-2-965-6950



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Strategies to Stimulate the Rural Economy under the National Mega-Regionalization Trend

Researcher Dong-Phil Lee, Eui-Sik Hwang, Mee-Ryong Song,
Jeong-Seop Kim, Jun-Pyo Hong, Young-Dan Kim,
Kwang-Soo Kim

E-mail ldphil@krei.re.kr

As transport and communications systems develop, we see a growing trend of mega-regionalization in which mobility of people and commodities increase. Rural areas are experiencing the mega-regionalization trend. This study aims to suggest policy directions and tasks to respond to the mega-regionalization trend from the perspective of vitalizing the rural economies. This study is composed as follows. First, we look into how mega-regionalization develops in rural areas. Second, we analyze positive and negative impacts of mega-regionalization depending on conditions of rural areas. Third, we review domestic and overseas cases and draw implications. Fourth, we analyze the states and problems of the government policies designed to stimulate economy in rural areas. Lastly, we present policy tasks to revitalize rural economies considering regional conditions in the context of mega-regionalization.

To figure out how mega-regionalization is taking place in rural areas and to analyze its impact, we analyzed statistics data of three regions, Yeo-ju gun, Wan-ju gun and Cheong-song gun and conducted a survey and interviews for public officials of local governments. To figure out how rural economy stimulation policies have been carried out and what problems they have, we did a

literature review and interviews for various cases. We examined and analyzed policies for agri-food industry nurturing, industrial complex in rural areas, specialized local industry, local festivals in rural areas and the establishment of a basis for self-sufficiency of rural areas.

The analysis of the mega-regionalization trend in rural areas shows that the impacts of mega-regionalization are different between rural areas near metropolitan area or large cities and rural areas in remote areas. In the agricultural and fishing villages near the capital area, as population is migrating to these villages from Seoul, the facilities related to residents' life are increasing. In rural areas near large cities which are not in the metropolitan area, the number of people engaged in management or service areas supporting industry activities is growing. In contrast, in agricultural and fishing villages in remote areas, as population drain becomes serious, the size of local markets is dwindling. The differences result from different situations of the regions. It suggests that we need to have rural economy stimulation policies to respond to mega-regionalization.

Agri-food industry nurturing policies need to be implemented in two ways depending on regional conditions. One is a strategy to differentiate agricultural products or foods in quality. And the other is a brand strategy which means that several cities and counties cooperate and concentrate on main items and then realize the economies of scale. To promote production and sales of agri-foods differentiated in quality, the strategy should be aligned with various policies which the central government is running in the region. Wide area local governments need to help primary local governments mobilize resources by establishing an organization to support

businesses in the agri-food industry such as food industry research and development center, food security center, food industry support center. The most important task to realize the wide area brand strategy is to nurture distribution organizations to cover wide production area by main product item. We need to revisit the current policies which individually support small-sized production and distribution companies.

Considering the mega-regionalization trend and changes in conditions of rural economies and in the tone of government regional policies, we should overhaul the policies concerning industry location in rural areas. We should improve the functions of industrial complex in rural areas which have played a crucial role in developing sources of income other than agriculture in agricultural villages, and seek new ways to combine the nurturing of industry and local development. The current policies for industrial complex in rural areas are carried out only at primary local government level, not considering the correlations with industries in other regions. Under the goal of creating an integrated local industry nurturing system based on mega-economic zone, the policies for industrial complex in rural areas should focus on connecting industrial complex in rural areas to various industries in other regions. To this end, we need to organize a cluster of innovative infrastructure in a broader area such as technology development, talent nurturing, organizations which train and support companies in rural areas and distribution network. For individual industrial complex in rural areas, we need to set up development strategies reflecting different conditions of each region. And old and worn-out complex should be

renovated. To do this, we should have mid-and-long term basic plans to nurture industrial complex in rural areas which are cohesive and aligned with national land development program, science and technology comprehensive plans of local governments, basic plans for industrial cluster development and various regional development plans of local governments.

Polices for nurturing specialized local industry are based on the endogenous development paradigm which means regional development is made mainly based on various assets the region has. In this regard, it is urgent to reform polices of central government which are led by the Ministry of Food, Agriculture, Forestry and Fisheries or the Ministry of Knowledge and Economy. We should reorganize the systems to make neighboring regions work together in carrying out policies to foster specialized local industries, instead of having cities and counties in the same region work on policies on their own. And regional special district systems designed to foster specialized local industries should be reformed. Especially, to increase the effect of deregulation, special districts related projects currently led by many government departments should be transferred to one policy coordination body such as the Regional Development Committee, so that the organization can reform these policies in an integrated and systematic manner. Another important part of specialized local industry nurturing is to promote local brands. The intellectual property systems related to this are led by many government departments based on laws such as the Trademark Law and the Agricultural Products Quality Control Act. By connecting and coordinating related jobs, we should minimize administrative

wastes and reduce companies' burden and consumers' confusion.

Local festivals in rural areas are a case in point to prove that the mega-regionalization embodying transportation development has positive impacts on rural economies. After decentralization was introduced, primary local governments have held many small-scaled local festivals. Some local governments hold local festivals even though they have little effect in boosting their economies. We should bring competition to local festival support policies so that we can select festivals with potential and concentrate support on these festivals, instead of providing supports to all local festivals. Rural areas near large cities are more likely to gain economic benefits from local festivals. To attract potential customers living in neighboring cities to festivals, rural areas near large cities should make strategic plans for their festivals. Local governments which share similar themes for festivals should cooperate with one another and integrate similar small-scale festivals to realize economies of scale.

Rural areas suffering the side effects of mega-regionalization such as dwindling population and population ageing should come up with policies to minimize the outflow of residents' income and to boost consumption within the region. They need to establish a foothold for achieving self-sufficiency. The outflow of income generated within the region should be minimized by concentrating resources on the efforts to enhance the functions of center areas in small communities. Also, we should reform subsidy support systems so that the government can make investments in improving quality of life of residents according to different regional conditions. Opinions

of primary local governments should be reflected in policy decision making as much as possible. Differential support rate should be applied to local governments according to their financial conditions. And one of the most important strategies for achieving self-sufficiency is to create more jobs in the region. So, when running public policy projects which can generate jobs, these projects should lead to sustainable community businesses, instead of one-time event.

Facing the mega-regionalization trend, in order to vitalize rural economies, the government should perform the following tasks. First, expand the budget of special accounts for wide area/regional development and reform the current blanket subsidy system. Second, consider introducing tentatively named Rural Area Industry Development Plans which fully reflect local conditions. Endogenous industry development strategies might be better for some rural areas and some regions might fit better with the mega-regionalization strategy which expands connection with other regions. Third, the government should provide additional supports to the regions with unfavorable conditions for economic development. The expansion of economic and life zones is highly likely to widen development gap between rural areas with easy access to large cities and those without. Fourth, reform policies to make industrial policies in rural areas well-connected to various local policies and then create synergy. Also, to create synergy among various projects running in the region, we should develop and implement projects for which several government departments work together such as tentatively named Joint Project for Agriculture, Commerce and Industry.

The Roles of Forest and Optimal Forest Management Schemes under the Convention on Climate Change

Researcher Sang-Min Lee, Kyeong-Duk Kim and Seong-Hwan Song

E-mail smlee@krei.re.kr

This study is designed to identify the roles of the forest and develop schemes to manage it as an optimized means of absorbing greenhouse gases. The schemes to mitigate climate change include reforestation, afforestation and efficient forest management of maximizing carbon absorption. As shown in Annex I, many industrialized countries try to establish various policies to win carbon emission rights through forest management in accordance with Kyoto Protocol. They prefer to focus on forest management rather than expensive reforestation or afforestation. These countries take forest management as a forest management scheme under the United Nations Framework Convention on Climate Change. The efforts to get permissions or credits for carbon emission, however, do not consider the efficiency of forest management, which includes socioeconomic values. And there is a need to prepare schemes to increase carbon absorption at the stand level since carbon account is calculated at the forest level as a whole.

Under such a background, this study seeks to find optimal forest management schemes. The rotation period of trees increases if the economic value of carbon absorption is also taken into account in

addition to the economic value of timber for the stands of pine trees and Korean pine trees. The current management method is also analyzed and compared with the optimal scheme. The result says that in the case of pine trees the rotation period is optimal with the current method, but the rotation period decreases and the function value (objective value) increases if the optimal scheme is applied. The reasons are that the late execution of second thinning brings about slow progress of volume increment and increases the rotation period. As the rotation period increases, the present value of stands is discounted more seriously. To enhance the value of stands, the current rotation period should be reduced, and the thinning should be executed once.

In the case of Korean pine trees, the current rotation period is too short, and it is not optimal even under the current management method. Under the optimal management scheme, however, the rotation period becomes shorter than the current method. This happens because the current method includes four times of silvicultural treatment, and it continues for 35 years after plantation. The cost of treatment can not be recovered until after 100 years of plantation. Hence, it is necessary to reduce the number of treatment as well as the age of the last application of silvicultural treatment.

The results of a simulation show that the rotation period becomes shorter if the discount rate increases, and it becomes longer if the price of carbon dioxide increases.

It is well known that the rotation period increases if public values are added to the stands. However, it is also possible to find an optimal management scheme by adjusting the number and the age of

silvicultural treatment. Consequently, it could not be an optimal method of forest management to apply a long and flat rotation period even when some public values are added, but it is necessary to adjust and apply various rotation periods according to treatment numbers and age of each species.

Also, the current effort to protect forest fire does not satisfy optimal conditions. The social value of the forest increases if we put more effort on fire protection. Consequently, it is necessary to increase fire protection efforts by increasing the government budget.

Inter-Korean Cooperation in Green Growth in the Agricultural and Forestry Sectors

Researcher Tae-Jin Kwon, Young-Hoon Kim and Min-Jee Nam

E-mail kwontj@krei.re.kr

This study aims to find out the possibilities of cooperation between South and North Korea for green growth in the agricultural sector, analyze the effects of cooperation, and suggest policy directions toward North Korea and strategies for green growth. The study seeks to contribute to the implementation of South Korea's policies toward North Korea and green growth by detailing the measures that can combine green growth with South Korea's policies toward North Korea, for coexistence and mutual prosperity.

Green growth is a concept that seeks to attain the two values of 'green' and 'growth.' As a concept that encompasses not only economic development but also social development and environmental preservation, green growth's ultimate goal lies on improving the quality of life by combining these elements in a non-confrontational, "win-win" way. The government legislated the Basic Law on Low-Carbon Green Growth on January 13, 2010, and enforced it on April 14, 2010.

The ways through which South and North Korea can approach future cooperation projects for green growth in agricultural and forestry sectors can be divided largely into two methods: reducing the effect of climate change and adapting to climate change. Some

of the cooperation projects that fit the reduction approach are projects that turn livestock waste into agricultural resources, preventing flood damage in the Imjin River basin, reducing tensions between South and North Korea through peaceful use of the DMZ, building model green growth zone, improving natural environment on the Korean Peninsula through forestation and prevention of deforestation, and monitoring, preventing, and controlling diseases and harmful insects through exchanges of agricultural climate data. As for adapting to climate change, it is necessary to promote joint research and human exchanges in preparation of the shifting in cultivation areas to North Korea, exchange agricultural and forestry experts, and foster human resources to increase the capacity for green growth.

To connect South Korea's green growth strategy with South and North Korean cooperation, it is necessary to carry out green growth related projects prior to among the projects that have been agreed on and lay down a foundation for green growth on the Korean Peninsula by improving the projects. Furthermore, legal and institutional improvements are needed to carry out green growth projects through South and North Korean cooperation. South Korea's policies on North Korea should be implemented in conjunction with green growth by setting up a South-North Korean cooperation team in the 'Green Growth Committee' and a green growth team in the Unification Ministry. Other measures that can increase the green growth potential of North Korea should also be studied, including denuclearization, South-North Korean cooperation, improvement of North Korea's domestic environment for economic growth, and the

five big assistance commitments. Expanding the green growth projects by using the South-North Cooperation Fund should also be studied.

The priorities or contents of the projects that have been agreed on should be adjusted, first, to fit the purpose of green growth, rather than carrying out green-growth agricultural projects independently from the projects already discussed. Since green growth should reflect both the environment and agricultural development, green growth projects should be categorized into several programs according to project characteristics and prepare each program to seek green growth on its own.

It is important that the government, local governments and the private sector divide up roles and establish a cooperative system. Since a lot of financial resources are needed to carry out cooperative development while promoting green growth, it is essential that the government participates. However, since the government cannot be in charge of all matters relating to green growth, it has to consult policies with local governments or the private sector. The monitoring function to improve efficiency and transparency during policy consultation and project implementation should be strengthened as well. To achieve green growth, the role of private companies is important than any other matters. It is also necessary to study ways to build a cooperative system between the government and the private sector based on this understanding.

Researcher Myong-keun Eor, Ki-Hwan Park, Eun-Mi Jeong,
Kyung-Phil Kim,
Byung-Joon Woo, Hyun-Joong Kim, Dae-Hee Chung,
Ho-Seok Han

E-mail myongeor@krei.re.kr

This study is the result of first-year study of two-year planned study on how to expand export market for agro-food of Korea. The purpose of the study is to support establishment of export-related policy. Thus, specific contents on how to increase export of specific products or to specific market are contained in the study on a limited basis as necessary, and the study is mainly composed of export policies and regulatory improvement.

While most of the existing studies on export of agro-food dealt with specific products or specific country, this study focuses on a variety of products and export markets. The first year study was conducted under the scope of flagship export items and flagship export markets.

Export items included in the study are 13 products such as paprika and strawberry among vegetables, rose and lily among flowers, apple, pear and persimmon among fruits, winter mushroom and ginseng among specialty crops, pork, chicken and dairy products among livestock products and Makgeolli among traditional alcohol. Export markets under analysis include Japan, Taiwan, China and the U.S, and among Southeast Asia nations, Hong Kong, Singapore, Thailand, the philippine and Vietnam are included in relation to

export items concerned.

First characteristics of Korea's export of agro-food is that many items highly dependent on Japanese market, making themselves vulnerable to the changing economic situation in Japan. In addition, as exporting companies are small in scale and fragmented, there is a possibility that export unit values might decrease due to intensified competition in export market and low-quality products are distributed. Another characteristics of export of agro-food is that the share of processed agricultural products that use imported raw materials is high. Above all, small-scaleness of exporting farms makes it difficult to secure a necessary amount of products for export on a stable basis.

Analysis of export market per item shows that in Japanese market, paprika of Korea outstrips that of the Netherlands and New Zealand based upon price competitiveness. Strawberry saw its market share decrease as its competitiveness decreased, but thanks to niche market for summer strawberry, it secured a more high end market than the U.S.

As for rose, as competitiveness of standard rose weakened, shift was made toward spray rose, maintaining a certain level of market share. As for lily, it is dominating the market with its high price and quality competitiveness. Makgeolli is leading the export of traditional alcohol in Japan where popularity of Makgeolli began.

Export of traditional alcohol to the U.S. is led by Makgeolli whose export surged since 2008. Especially, future export outlook is bright as increasing import of Makgeolli comes at a time when total import value of other fermented alcohols is decreasing. However,

due to the limits of small market that has Korean national as a main consumer, unit cost of production is decreasing as many companies entered into the U.S. market, more than doubling the export.

According to simulation that was based upon survey of consumer preference in Japanese market, the form of paprika that is expected to secure the biggest market share is packaged-type that is big-sized and inexpensive in three colors. As for rose, pink standard rose that is individually packed that allows consumer to buy a single flower, and lily whose size is big, lowed-priced, white and individually packed type that allows consumers to buy a single flower are expected to have the biggest market share.

Consumers in Japanese market have commonality in that they prefer different forms by items, but the price was the most important factor in their decision making when buying products.

In Taiwan, for both apple and pear, type of product packed in less than 4 big-sized sweat, soft and juicy fruits is expected to have the biggest market share. While it was known that sugar contents is the most important characteristics of fruits, consumers in Taiwan prefer an appropriate level of sugar content to high sugar content. Consumers in Singapore prefer large-sized sweat strawberry, while they are not interested in origin of country.

In production stage, systematization of producing farms is the most important alternative, and systematization by characteristics of item is necessary. In commercialization stage, support needs to be given, particularly, to modernizing site for selecting fruits, reefer container, cold storage and HACCP certification so that agro-food can be exported without any government support in the future by

expanding export infrastructure promotion project, while reducing support project for logistics cost in export support system.

In export logistics stage, support can be given to improve logistics facilities including customs, quarantine institute and port of registry in order to maintain freshness of products when they pass through export inspection and customs, while improvement needs to be made in a way that differentiated level of logistics cost is given for better efficiency.

In inspection and customs stage, lifting of inspection (Samgyetang to the U.S), introduction of local inspection system (vegetables and flowers to Japan) and expansion of registered pesticide (Taiwan and Japan) are needed through development and supported distribution of disease control technology using natural enemy and active negotiation on export inspection.

In import distribution stage, support can be given to create “Fair Competition Autonomous Consultation Committee(tentative)” to discontinue supporting logistics cost for those companies engaged in overseas dumping, strengthen post-management of exporting companies and help fair trade regime in overseas market take root. In consumer purchase stage in overseas market, support can be given to attendance of exhibition, advertising and promotional activities for raising awareness of Korean agro-food.

In particular, continuous support can be given to promotional activities for better image and greater awareness of WHIORI brand, which is a joint brand, association of food and beverage testing with globalization of Korean food, provision of information utilizing social network service and location of local large retailers.

Economic Analysis of the Non Tariff Measures of Agri-Food Products in Korea

Researcher Joo-Ho Song, Mee-Bok Kim, Sang-Gon Jun,
Dae-Hee Jung and Jung-Min Lim

E-mail jhsong@krei.re.kr

As tariffs have been reduced with free trade negotiations such as FTA and DDA making progress, the influence of non-tariff measures (NTM) such as sanitary/quarantine, labeling and standardization on trade has been growing. NTMs have been high on the agenda for discussion at the SPS Committee, the TBT Committee and the Trade Policy Review Body of the World Trade Organization (WTO). In Korea, however, NTMs have attracted little interest and have not been studied very much. This study inquires into the theory and research trend of NTMs at home and abroad, introduces NTMs in agri-food products in Korea, and tries to conduct an economic analysis of the four most representative NTMs.

NTMs can be described as policy measures other than tariff which can economically affect the quantity or price of the products or both in international trade. Many studies have analyzed the economic impact of NTMs by using various methods. Traditionally, studies on NTMs have focused on the idea that NTMs impede trade and calculated tariff equivalent. Recently, however, a growing number of analyses say that NTMs boost trade and increase welfare effect. The methods to quantify NTM effect vary by researcher and

by case. This study introduces the methods separately.

The WTO Agreements prescribe the duty of members to notify the committees. The agri-food field is closely related to SPS and TBT Agreements. When there is a change in sanitary of the country or in plant hygiene, members are required to notify the SPS Committee. And when the introduction of new technology regulations may have a significant impact on trade of other member countries, the key contents and the products to be affected shall be notified to the TBT Committee.

Korea has notified 171 cases to the SPS Committee since 2005 and specific trade concerns (STC) have been raised against the notification by the SPS Committee for issues such as distribution period, a ban on frozen chicken imports, a restriction on beef imports, notification of living Modified Organisms (LMO) crossing borders and regionalization.

Of the notifications Korea has sent to the TBT Committee from 2005 to Jan. 2010, 58 cases were related to agri-food products. 18 STCs were raised against Korea's NTMs by other countries and 5 of which were related to agri-food products (the country of origin labeling for import fruits, amendment of food labeling standards, certification of organically processed foods).

A comparison of NTMs of Korea and other countries suggested that we need to submit HS number for the products affected by NTMs when notifying NTMs to the WTO (e.g. describing as HS 0402 instead of livestock) and we need to utilize the SPS and TBT Committees more aggressively.

The history of Korea's notification of NTMs has some

implications for us. First, regarding NTM notification, we need to take enough time in making plans and have buffer before implementing NTMs. Second, before introducing NTMs, we need to clearly check whether the new NTM will fit with international standards in advance. Third, impact analysis must be done and risk assessment, review of international regulations, cost-benefit analysis must be conducted thoroughly before introducing NTMs.

In this study, out of NTMs related to Korea's agri-food products, four cases were selected which are deemed to be representative and be important in the recent global trend and economic impact of them was analyzed. In an empirical analysis of these four NTMs, as most of NTMs had a short history of being implemented or still had yet to be implemented, we found it difficult to gather data and relied on assumptions when conducting the analysis. Through simulations, we estimated benefits and as for costs, we introduced the outcome of advance research or skipped because it takes long time in doing a field research.

- 1) We analyzed the economic impact of GM food labeling. In case of soybean, as the price of non-GM foods are relatively high in the traditional market, welfare of consumers was reduced. Unless welfare improves significantly in the new market, welfare will be reduced in overall. Yet, according to simulation results, as prices of GM foods are far lower than those of non-GM foods in reality, in most cases, welfare is higher with the GM food labeling system in place.
- 2) We analyzed the impact of the resumption of citrus exports to the United States. Korea had exported citrus to the U.S. until

2002 when citrus canker was detected in export cargo. Since then, citrus export to the U.S. has been banned. But with the recent agreement at the Korea-U.S. quarantine officers' meeting to resume the export, citrus exports to the U.S is expected to resume from the end of 2010. Once citrus exports to the U.S. are resumed, there will be additional demands in overseas markets and the prices of citrus will be raised in the domestic market which will in turn lead to more production, thus an additional 5.4 billion won of profit to producers.

- 3) We analyzed the country of origin labeling at restaurants. Restaurants of 300 m² or larger in size were required to display the country of origin for beef from Jan. 2007. From Jul. 8th, 2008, the amended rule required all the general restaurants, rest area restaurants, feeding facilities which serve beef, pork and chicken to display the country of origin. In this study, we calculated the impact of the implementation of country of origin labeling at restaurants by using a comparative statics analysis model. The analysis showed that after the country of origin labeling was implemented, the sales of Korean native beef went up 12.4%, down 18.5% for beef cattle and down 20.8% for import beef.
- 4) We analyzed the impact of importing Brazilian beef when recognizing regionalization. Regionalization, one of SPS Agreements of the WTO, means that even for a country affected by outbreaks of insects or viruses, if the country has regions without the outbreaks, imports from the unaffected region should be allowed. Brazil which was affected by foot

and mouth disease (FMD) wants to export pork and beef to Korea and is requesting an import approval to the Korean government, on the ground that Santa Catarina was categorized as FMD-free zone without vaccination. When regionalization is recognized, exports will be resumed in the regions for which regionalization was recognized, and it will increase production volume and in turn drive the market price down. According to the analysis, when the price of import beef drops 5%, equilibrium quantity of Korean native beef will drop 0.9% and down 1.8% for equilibrium price.

Even though every single case selected in this study is important and worthy an independent study, this literature only touches the backgrounds and economic analyses of each case due to the lack of data. We are looking forward to seeing more sophisticated economic analyses will be done actively in Korea based on the analysis methods described in this study.

Mid/long-term Development Strategies of Food Industry to Create New Agricultural & Fishery Added Values (Year 2 of 5)

Researcher Ji-Hyeon Choi, Chang-Gon Jeon, Kyei-Im Lee, Yong-Sun Lee,

Seung-Yong Gouk, Jae-Hwan Han, Dong-Hoon Kim,
So-Hyun Cho, Sun-Lyung Lee

E-mail jihchoi@krei.re.kr

This research, a 5-year project, was performed to provide basic data necessary for future research of the food industry, develop relevant policies after identifying present problems of the food industry, upstream and downstream industries, and present development strategies to create high added values in agriculture. In the 2nd year of the research, the correlations between the components of the food system, such as production, processing, distribution and consumption, were analyzed and pertinent development strategies were presented. The processing industries of beans, rice, fruits, and ginseng/medicinal herbs were selected as the target industries of the 2nd-year research considering the domestic demand and supply situation of agricultural products.

The result of the analysis showed that the market for bean curd, soy sauce, bean paste, red pepper paste, and processed products of rice, fruits, and ginseng/medicinal herbs had all small industrial structure, and the degree of market concentration, therefore, was generally high except that of processed rice products. This clearly indicates the polarization of industries.

As added values of these processing industries increase relatively faster than the average food manufacturing industry and the rates of

their added values were higher than the average food manufacturing industry, it is judged that the possibility of future development exists to some extent. The market for these processed products currently shows a trend of stagnation or a little increase; but based on the result of a consumer survey, it was analyzed that there is a significant possibility of market expansion with health-oriented functional well-being processed products. The labor productivity of the industries concerned, however, was analyzed to be relatively lower compared to that of other manufacturing industries, and therefore the enhancement of added value through investment expansion on R&D seems to be an important task.

The result of an analysis on the behavior of raw material procurement in the industries of agricultural processing showed that the ratio of raw material procurement through contract cultivation was less than 20% and the procurement of raw materials through contract cultivation was therefore not activated. This implies that, in the future, a systematic linkage of buyers and producers will be necessary. From the standpoint of buyers, domestic raw materials are preferred as they are superior in quality and stability, whereas high prices of raw materials are the constraint to the expansion of their use. The result of a consumer evaluation of major processed agricultural products showed that the preference toward processed products, such as bean curd, soy sauce, bean paste, red pepper paste, and processed products of domestic rice and ginseng, which are made of domestic raw materials, was higher than the preference toward imported raw materials.

Based on future prospects of major products, it is anticipated that

there will be no significant growth in the markets of bean curd, soy sauce, bean paste and red pepper paste, but growth is promising for well-being products which coincide with consumer needs. In the case of rice processed products, the possibility of market expansion is significant for rice noodles and rice bread depending on the extent of product development that can satisfy consumers' demand quality-wise at appropriate price level. In the case of fruit juice, the market for favorite health drinks instead of fruit concentrates, is expected to grow in the future. Ginseng and medicinal herb processed products are expected to grow at a high growth rate of 5% or so annually on average.

The problems these processing industries face are related to stable supply of raw materials, scientific quality management, development of diversified products, insufficient R&D, and the small scale of businesses. In order to overcome the problems and further develop the industries, the base for stable use of domestic raw materials should be established first, and R&D investment should be expanded to develop new products. Also, the circumstances for promoting consumption should be created through aggressive publicity of nutritional superiority and health functionality of the foods concerned, as well as sustained scientific quality management of raw materials and processed products. In order to improve the quality of the processed foods, it is important to develop raw materials which have outstanding adaptability for processing and manage the quality of the processed products scientifically. Besides, scientific quality management from the aspects of sanitation and safety is urgently needed for domestic supply as well as for export growth. Lastly, the

labeling system should be improved and plans should be made to improve the policy-based system for industrial development.

The implication derived from this research is that domestic raw materials are quality-competitive but continuous efforts to reduce their price should be made systematically from the breed development stage to processing and distribution stages so that buyers can use them continuously. To provide stable supply of the domestic raw materials and manage their quality systematically, it is also important to create producer organizations and production complexes.

The government needs to implement the labeling system and improve the tax structure as soon as possible as these are pressing issues of today. Recently, the government is in the middle of developing a 2nd-stage master plan for the food industry and the researchers expect that the detailed implementation strategies presented in this research are adopted and properly implemented by the government.

Current Situation of the Rural Vulnerable Class and Policy Improvement Measures: Centered on the Elderly Living Alone and Grandparents-Grandchildren Families

Researcher Dae-Shik Park, Sang-Jin Ma, Kyung-Eun Choi

E-mail pds8382@krei.re.kr

The purpose of this study is to conduct an in-depth investigation into the actual conditions of the venerable class living in rural areas focusing on the living alone elderly and grandparent-grandchildren families and to suggest policy tasks to help address the various difficulties facing these people.

Methods used in this study are a literature review, survey, in-depth interviews, a case study of foreign countries and opinion of experts and the people concerned.

When it comes to the actual conditions of the living alone elderly in rural areas and their desire for welfare, around two thirds of them have been living alone for more than 10 years. And the biggest difficulties they feel in living alone are frail health and economic difficulties.

The elderly who are living alone contact their children once or twice a month. One fourth of them are engaged in farming or fishing and only a few of them work for a living in areas other than farming and fishing.

Average monthly income of the living alone elderly is as low as 422,000 won and average monthly living expense is 328,000 won, and most of which are spent on meal, housing, healthcare costs.

Half of them suffer from chronic illnesses for more than one month. The houses where they live are old and have poor ergonomics for the elderly.

Many elderly who are living alone participate in social gatherings or religious groups yet few do cultural activities or voluntary works.

The elderly living alone show very low level of life satisfaction, and social support affects their satisfaction with life. When it comes to social supports by subject, supports from families and relatives positively affect their life satisfaction, and emotional supports have a positive influence on their life satisfaction level when looking into social supports by type.

When asked about their social welfare service use and desire for welfare services, they are using Basic Old-age Pension most among social welfare services related to income and economic activities. And the most needed service that they think is Basic Old-age Pension and followed by National Pension and National Basic Livelihood Security System.

As for healthcare-related social welfare services, most of the elderly living alone have little experience of using them and do not know well about them. The service they think they need the most is support for medicine and medical expenses and followed by health center's home visit medical service, prosthesis/dentures and hearing aids support.

When it comes to housing-related social welfare services, one third of the elderly living alone are using residential facilities such as elderly halls. And they highly recognize the need for heating and transportation supports.

Even though the living-alone elderly have little experience of using other social welfare services such as the elderly care, they think they are badly in need for these services.

Korea's policies for the elderly living alone are based on the Elderly Welfare Act and the Framework Act on Low Birth Rate and Aging Population. Policies and businesses related to the elderly living alone in rural areas are Elderly Care Basic Service (previous, the Elderly Care Service Voucher), the Long-term Care Insurance for the Elderly, Basic Old-age Pension, Emergency Safety Care Service for the Elderly Living Alone (previous, U-care system for the elderly living alone), job creation projects for the elderly and manpower support for the vulnerable farmers.

Foreign policies related to the elderly living alone in rural areas have the following implications. The advanced countries have support systems for the living alone elderly in place which are linked to local communities, and put an emphasis on strengthening social support networks to improve welfare for the elderly.

We suggest the following four policy tasks to improve policies for the elderly living alone in rural areas. First, remove the dead zone of social security network and reorganize systems according to the situations of rural areas. Second, create customized measures which reflect socio-economic characteristics of the living alone elderly. Third, strengthen social support networks and improve life satisfaction of the elderly living alone. Fourth, reform the National Basic Livelihood Security System and the Basic Old-age Pension according to the reality of rural areas. To this end, following measures are required; 1) nationwide expansion and improvement of

group home projects by utilizing elderly halls and village halls and so on, 2) reinforcement of meal services and nutrition improvement programs, 3) expansion of emergency safety care for the elderly living alone, 4) improvement of job creation projects for the elderly, 5) support for walking assistance appliance, 6) improvement of the elderly care services, and 7) improvement of manpower assistance for the vulnerable classes.

When looking into the actual life and welfare desire of grandparents-grandchildren families in rural areas, the average age of grandchildren is 12.7. Most of grandparents are raising their son's children and they have raised grandchildren for 8.6 years on average. Main reason for raising grandchildren is family breakdown.

When asked how frequently they contact people, they said that they contact their sons and daughters once or twice a month or once or twice a year, relatives once or twice a year and friends and neighbors almost every day.

One third of grandparents in grandparents-grandchildren families are engaged in farming or fishing and only 14.7% work for a living in areas other than farming or fishing.

Average monthly household income of grandparents-grandchildren families is 697,000 won and average monthly living expense is 584,000 won.

37.7% of them suffer from a chronic illness for more than one month. Most houses are too old and need remodeling or repairing.

When asked about social participation, most of them participate in social gatherings or religious groups yet few do cultural activities or voluntary works.

When looking into the relationship between grandchildren and their parents, most of parents are living alone after getting divorced and more than half of grandchildren are not in touch with their mother. Only a few parents send money for raising their children and most of parents are reluctant to take their kids back and raise them in the future.

The advantages grandparents think they have in raising grandchildren are taking care of their grandchildren at their home makes them feel relieved and grandchildren brings vitality to their home. When asked about the difficulties of raising grandchildren, they said that they feel burdened with child care expense and child care is beyond their strength.

When asked how much satisfied they are with life, most of the elderly in grandparents-grandchildren families show low life satisfaction. When looking into how much impact social supports have on their life satisfaction, social supports have little impact on how they feel about their life, which, we believe, is because social supports for grandparents-grandchildren families are absolutely in short. Variables that have a relatively big impact on the elderly in grandparents-grandchildren families are frequency of contacting their children, life of grandchildren and their own health condition.

When looking into social welfare service use and desire for welfare, they are using Basic Old-age Pension most among social welfare services related to income and economic activities. And the most needed service that they think is Basic Old-age Pension and followed by living cost support in the National Basic Livelihood Security System, the National Pension and other living expense

supports.

As for healthcare-related social welfare services, most of the elderly living alone have little experience of using them and do not know well about them. The service they think they need the most is support for medicine and medical expenses and followed by prosthesis/dentures and hearing aids support, health center's home visit medical service and walking assistance appliances.

When it comes to housing-related social welfare services, one fourth of the elderly in grandparents-grandchildren families are using residential facilities such as elderly halls. And they highly recognize the need for heating and transportation supports.

For childcare and education related social welfare services, only a few grandparents-grandchildren families use these services. Yet, most of them share the need for these services. Even though the elderly in grandparents-grandchildren households have little experience of using social welfare services such as Elderly Care Service, they believe they are badly in need for these services.

There is no special support system focusing on grandparents-grandchildren families in Korea. Supports partially related to grandparents-grandchildren families in rural areas are National Basic Livelihood Security System, health insurance premium reduction, Basic Old-age Pension, healthy family support system, Dream Start, foster home care system and local governments' ordinance for the support for grandparents-grandchildren families.

Foreign policies related to the elderly living alone in rural areas have the following implications. They provide medical, education and living expense supports in a systematic manner by amending the

relevant laws. Kinship foster care in the U.S. is similar to foster care by grandparents in Korea's foster care programs.

We suggest the following policy tasks to improve policies for grandparents-grandchildren families in rural areas. First, recognize grandparents-grandchildren families as a form of families and make them beneficiaries of relevant policies, and then make organized support systems. Second, provide integrated supports to grandparents-grandchildren families in rural areas. Third, create customized services to meet various welfare needs of grandparents-grandchildren families and strengthen supports to enhance family capabilities. To this end, following measures are required; 1) a fact-finding survey on a regular basis, 2) enactment of a law designed to support grandparents-grandchildren families, 3) integrated case management and support, 4) support of housework helpers and family counseling services, 5) mentoring programs for adolescents, 6) enforcement of grandparent education, and 7) establishment of social support networks.

Strategy Development for Promoting Green Growth in Agricultural and Rural Sectors

Researcher Chang-Gil Kim, Jeong-Seop Kim, Myoung-Ki Lee,
Hak-Kyun Jeong, Yoon-Hyung Kim, Jeong-Kyung Jang,
Young-Dan Kim and Tae-Hoon Kim

E-mail changgil@krei.re.kr

Green growth is the pursuit of economic growth, while preventing environmental degradation and unsustainable natural resource use. Korea imports about 97 percent of consumed gross energy as one of 10 energy consuming countries and has a challenge to find a new source of energy to cope with climate change and exhaustion of fossil fuels. As the climate gets warmer and warmer, the international society further tightens environmental restrictions to reduce greenhouse gases (GHGs). Under such changing circumstances in Korea and other countries, the Korean government presented ‘low carbon green growth’ as a preemptive measure to cope with climate change and energy crises. In this vein, it is necessary to present practical strategies to promote green growth and successfully implement a master plan for green growth.

This report is the first-year outcome of a two-year research project (2010-2011) titled ‘Strategy Development for Promoting Green Growth in Agricultural and Rural Sectors,’ a cooperative task of the Korea Council of Economic & Social Research Institutes. The purpose of this research is to present a systematic, step-by-step strategy to promote green growth in agriculture and rural sectors by

further examining the direction of discussion on green growth in Korea and other countries.

The major findings of this study are summarized as follows:

First, the amount of emitted GHG in the agricultural sector occupies 2.9% of the gross amount of emitted GHG. The BAU figure in 2020 was estimated to reduce the figure by 0.5% as compared to the number in 2005, in accordance with the IPCC guideline for calculating the amount of GHG emissions. This is higher than -4.0%, which is a target figure for national GHG reduction, and this implies that it is necessary to take measures to reduce and absorb GHG in the agricultural sector by using various technologies for reducing emitted GHG from farmland and for storing organic carbon in soil and improving enteric fermentation of ruminant livestock.

Second, an assessment of green growth policy in the agricultural sector showed that the means of achieving green growth have been properly combined, but it is necessary to develop policy programs to achieve fruitful outcome of green growth and effectively supply green technology. An assessment of green growth in the agricultural sector for the detailed tasks to be promoted in the sector showed that it is necessary to include policy means to embody the tasks, policies, and systems related to green growth in the current rural sectors.

Third, a survey of farmers and specialists on their recognition of green growth showed a positive response toward combined promotion of environmental conservation and economic growth. They said ‘furthering biomass energy’ and ‘spreading and supplying

green technology' should be policies of first priority. In addition, they evaluated that it is important 'to enhance preventive measures to cope with climate change' and 'drive the project of creating eco-friendly agricultural sectors.'

Fourth, a diagnosis of the current policy integration associated with green growth showed that it is necessary to set the basic direction of agricultural policy on harmonization of the economy with the environment and maintaining balanced green growth related policies, and improve the policy promotion system for policy integration. It is indicated that the budget system related to performance management and mid- and long-term plans are not satisfactory, and there is a need to build an assessment system to evaluate a specific policy's contribution to green growth.

Fifth, an analysis of organic agriculture and the eco-efficiency of geothermal heat pumps to measure the level of green growth showed that organic agriculture was higher than conventional agriculture by 32.0 and the geothermal heat pump was higher than the petroleum heater by 5.1. An analysis of technical efficiency of organic rice farming to compare it with the eco-efficiency index showed that higher technical efficiency groups had higher eco-efficiency indices as well.

Sixth, an analysis of green productivity according to the carbon productivity index showed increasing carbon productivity. However, this results from a reduction in the amount of nitrogen fertilizer used due to a reduction in rice fields and from an increase of GDP due to an expansion of pig farming, and this is not the type of green growth resulting from applying green technology. What this implies

is that there is a need to promote green growth through green technology, which includes the technology of reducing the amount of nitrogen fertilizer applied on farmland and the technology of reducing GHG from ruminant livestock.

Seventh, a green growth potential index of rural sectors derived from an OECD index showed that green growth potential derived from the four indices of ‘green growth,’ ‘green consumption,’ ‘green resource base’ and ‘environmental living quality of residents’ exists in relatively less urbanized areas, i.e., mountainous regions of Gangwondo and Gyeongsangbukdo and some plain regions in Jeollanamdo and Jeollabukdo.

Eighth, it is necessary to develop low-carbon policy programs benefitting agricultural activities that reduce or absorb GHG and feasible programs, such as the carbon trading system, for reducing GHG. Exemplary green technology that is very useful includes vertical farms for producing farm products as produced in factories through a supercritical fluid system for eco-efficiently producing food, energy, raw chemicals and products from geothermal, LED, and biogas plants and biomass resources which can reduce energy costs and the environmental load through high-tech environmental control and automation. Green technology should be accompanied by appropriate green finance to reduce risks because it needs high-cost investment in the initial stage.

Ninth, it is important to establish green growth policy targets that suit local conditions, create circumstances for a local government to implement green growth policies, set up a green resource management system to efficiently manage various green resources,

foster green industries and create green employment, and construct a foundation for using renewable energy and saving energy.

Lastly, in order to achieve the agricultural policy target of harmonizing the economy with the environment, it is necessary to introduce an environmental impact evaluation system for agriculture and rural sectors. Also, it is necessary to reorganize the policy promotion system by setting up a task force to be devoted to energy and environment related policies, and enhance the connectivity between the budget and policy outcome by evaluating the impact of individual policies of green growth to be reflected in the budget.

Prospects of Demand and Supply of Energy in the Agricultural Sector and Strategies for Introducing Clean Energy Farming System

Researcher Yean-Jung Kim, Ki-Hwan Park, Chang-Yong Kang,
Yun-Hyung Kim, Eun-Mee Jeong, Woong-Yeon Lee,
Hyun-Tae Park, Min-Ji Park

E-mail yjkim@krei.re.kr

Energy consumption in the agricultural sector increases annually and, due to increasing oil price, the competitiveness of agriculture is threatened. Accordingly, it is time to actively search for development and utilization of clean energy to solve energy and environmental problems.

The agricultural sector continues to use 1.8% of national energy consumption, but the cost of energy for agricultural production is very high. Energy inputs for expansion of horticulture facilities and mechanization, in particular, are increasing, raising the need for and policy interest in efficient management of energy in the agricultural sector.

The sources of energy used in the agricultural sector are oil (73%), electricity (19%), and natural gas (0.3%). Consumption of renewable energy is almost non-existent, and the distribution of renewal energy is still at an insufficient level.

To prepare an efficient management plan for agricultural energy, an input-output analysis was conducted to understand the energy input structure of the agricultural sector. It was found that energy consumption has largely increased in the farming sector. The farming sector comprises mainly vegetables and flowering plants,

with annual consumption of vegetables increasing by 9% and that of flowering plants more than 11%.

Among all currently usable energy sources, farmers prefer mainly oil and electricity, and the preference for renewable energy sources such as terrestrial heat, solar heat, and wind was low. The big energy-saving facilities that will be preferred by greenhouse growers in the future are multi-layered heat-keeping curtains and vertical heat terrestrial heat pumps. Every farmer wants to upgrade to a highly efficiency facility, but the problem is cost.

At present, the major applicable energy sources in the agricultural sector among renewable energy are terrestrial heat and biomass. Heat pump systems and wood-pellet stoves also use terrestrial heat. The use of renewable energy for heating has the direct effect of reducing fuel expense and increasing productivity and the indirect effect of reducing CO₂ discharge.

To achieve a wide application of clean energy sources such as terrestrial energy or wood-pellet biomass in the agricultural sector, the foundation for expanding the use of the energy sources should be constructed first. Specifically, a plan to support facility installation of renewable energy should be made and an incentive system to encourage its use should be introduced. In addition, continued technology development and collaboration with professional construction companies are required to reduce the supply price of clean energy facilities applicable to the agricultural sector.

As a countermeasure to global warming, advanced countries such as the United States, Japan, and Europe put their efforts into

reducing the consumption of fossil fuels, improving energy efficiency, and distributing clean energy.

In the U.S., the Waxman-Markey bill established the goal of reducing greenhouse gases by 17% by 2020 and 80% by 2050 compared with the 2005 level.

In the case of Japan, the Basic Bill for Global Warming Prevention was passed in March 2010, and greenhouse gases are planned to be reduced 25% by 2020 compared with 1990. Europe is in the process of implementing a plan outlined in “Renewable Energy Target for Europe 2020” to increase renewable energy consumption by 2020 while simultaneously reducing 20% of greenhouse gas generation.

The U.S. agriculture is trying to spread the use of wind force, solar energy, and bio-ethanol. Japan is planning to maintain biomass towns in 300 regions by 2010. Europe is putting efforts to produce bioenergy such as wood pellets supplied from the forest and biogas using livestock manure.

The use of clean energy by these advanced countries is expected to bring about not only a reduction in greenhouse gases but also increased employment opportunities in agricultural regions as well as lower energy cost, energy independence, security, and consumer protection. As reviewed in the cases of advanced countries, Korea should also encourage the use of renewable energy and raise energy efficiency to prepare for reduced consumption of fossil fuels. To achieve this, it is necessary to provide support and investment at the national level to find clean energy sources and build infrastructure.

Researcher Kyeong-Hwan Choi, Gwang-Seok Chae, Byeong-Seok Yoon

E-mail kyeong@krei.re.kr

This study aims to investigate the performance and problems of crop insurance and suggest tasks for stabilizing and expanding crop insurance as a farming stabilization policy system.

We used several methods for this study, such as literature review, a survey of other countries' experience, an analysis of statistical data, and interviews of farmers. This study is differentiated from previous studies in terms of actual data used. They are collected from 2001 crop year to 2009 crop year.

Crop insurance was started in 2001 for apple and pear in Korea. After that time, various crops were included. Twenty five crops, nationwide or in particular areas, are insured in 2010. The Korean government has a schedule to extend it to over 30 crops after 2011.

The number of farmers insured was 8,055 in 2001 and has significantly increased to 32,966 in 2009. But most of the farmers insured were apple and pear growers. The coverage options are 70% or 80%. Most farmers select 80%. It turns out that farmers prefer wider coverage although the burden of premium that they have to pay was heavier. There is statistically significant difference in the results of loss assessment between agencies. It is necessary to adopt several measures for proper assessment. The premium rates (standard

rate) are calculated on the basis of each county level. Based on the historical record of losses, individual premium rates are decided to add or discount extra rates. In terms of the premium rate and loss ratio, the grape farmers with high risk bought crop insurance, but the grape farmers with low risk didn't buy crop insurance. So, the premium rates for grape seemed to increase continuously.

During the nine years, about 52 thousand farmers received 297.2 billion won. The effect of crop insurance in stabilizing farm management was analyzed and the result shows that crop insurance has contributed to the stabilization of farm management because the maximum variation of the insured farmers' revenue is 606 thousand won per 10a compared to 806 thousand won for non-insured farmers. Also, it is true that there are adverse selection and moral hazard.

The result of the interviews shows that farmers want extension and diversification of insurance for natural disasters.

The U.S., Japan and Canada have been implementing agricultural insurance for about 70 years. They have provided insurance for various crops and researched many alternatives to help stabilize farming. Nowadays, they tend to expand revenue assurance programs concerning the farm level stabilization rather than the individual crop.

The introduction of crop insurance affects Korea's agricultural policy. But there exist many problems because crop insurance has expanded in a too short period. Accordingly, there are several tasks enabling crop insurance to become a useful tool for farm management. First, the government and NACF have to provide the

extension service on crop insurance for farmers continuously. Second, more natural disasters must be insured. Third, it is important to make an effort to improve proper loss assessment. Forth, it is useful that farmers are forced to insure all the acreage for the same crops in order to increase the effect of risk allocation and reduce the moral hazard problem. Fifth, the redundant program should be eliminated in farm stabilization policy. Sixth, it needs to review the feasibility of revenue assurance alternatives. Seventh, more research related to crop insurance is helpful.

Researcher Seok-Doo Park, Hong-Sang Kim, Chang-Ho Kim

E-mail sdpark@krei.re.kr

The ultimate purpose of this study is to come up with measure of managing water demands and irrigation facilities to effectively use and manage the existing irrigation facilities, instead of expanding supplies by building new facilities to meet water demands for various purposes which are forecasted to grow. To this end, this study is comprised of the following chapters. Following introduction in Chapter 1, in Chapter 2, we look into the status of supply & demand and water quality of the overall water resources and agricultural water. In Chapter 3, we look into the actual state and problems of irrigation facilities and irrigation facility maintenance projects. In Chapter 4, we review the status of irrigation facility maintenance systems and policy tasks. In Chapter 5, we suggest the basic directions and goals and policy measures to solve the problems identified in the previous chapters. The outcomes of the study are as follows.

(1) Status of supply & demand and quality of water resources and agricultural water

According to the ‘Long-term Comprehensive Water Resource Plans (206)’, out of a 124 billion m³ of the total water resources,

42% evaporate into the air, 58% (72.3 billion m³) flow to rivers of which only 27% are used in dam, river and ground water while 31% go to the oceans. The total amount of water resources slightly increased from 110 billion m³ in 1965, to 126.7 billion m³ in 1990 and to 124 billion m³ in 2003 while the amount of water use jumped from 5.1 billion m³ to 24.9 billion m³ and to 33.7 billion m³ during the same period. The portion of agricultural water in water use reduced from 88% to 59% and to 47% yet, it accounts for a larger portion compared to municipal water (23%), maintenance water (22%) and industrial water (8%). According to the outlook of water supply and demand, water supply is forecast to increase from 34 billion m³ in 2006 to 35.2 billion m³ in 2016 and then decrease to 35.1 billion m³ in 2020, while water demand is forecast to increase from 34.4 billion m³ to 35.5 billion m³ and to 35.8 billion m³ during the same period and then decrease to 35.6 billion m³ in 2020. Water supply shortage is expected to reach 300 million to 500 million m³ during the same time frame. As the size of farmlands is retreating, water channels are being structured and water management automation systems are spreading, demand for agricultural water is forecast to continuously drop from 16 billion m³ to 15.8 billion m³ to 15.7 billion m³ and to 15.6 billion m³ during the same period. As a countermeasure to stabilize water supply and demand, 15 multi-purpose dams have been constructed and additional 5 dams are under construction now and agricultural water development projects have been carried out. But focus should be away from expansion of water supply and move towards the reduction of water demands.

When it comes to the quality of agricultural water, according to

the water quality investigation conducted into 17,623 lakes in 2009, 210 lakes (1.2%) are above environmental water quality standards for agricultural water (Grade 4: COD 8mg/L). And according to the investigation in water quality monitoring network for agricultural water, the portion of the facilities exceeding the water quality standards continued to grow from 16% in 2003 to 20% in 2009, which means that it is urgent to improve the quality of agricultural water.

(2) Status and tasks of irrigation facilities for agricultural use and maintenance projects

In 2008, out of 831,553ha of irrigated paddy fields, 4,678,185ha (56.2%) is benefited areas by reservoir, 168,745ha (20.3%) by pumping stations, and 86,222ha (10.4%) by diversion weirs. The problems we found are as follows. 1) The portion of irrigated paddy fields which can endure a 10 year-frequent-drought (47% of the total paddy fields) is low. 2) Many facilities are worn out. Out of 69,899 irrigation facilities, 19,831 (28.4%) are 30~50 years old. 17,606 (25.2%) are more than 50 years old. Especially, out of 17,699 reservoirs, 61.8% are 50 years or older. 3) There are many small facilities. Out of 42,792 main intake works, 31,542 (73.7%) have irrigation areas whose size is 10ha or smaller. Yet, the irrigation area of these intake works is 126,173.1ha in size or only 15.5% of the total irrigation area. When including the number of intake works whose irrigation area is 10ha~50ha in size, they represent a whopping 91% of the total intake works. In contrast, the number of intake works whose irrigation area size is 1,000ha or larger is 74 or 0.2%. Yet, the size of these irrigation areas is 228,709.2ha or 28.0%

of the total irrigation area. 4) Earth work water channel makes up for a large portion. In 115,580km of the total extension of water supply channel, earth work water channel represents 52.5% and construction water channel 47.5%. In 66,713km of the total drainage extension, earth work water channel makes up for 75% and construction water channel 25%.

The money spent on irrigation facility maintenance project increased by an average 6.2% annually from 214 billion won in 2000 to 273.2 billion won in 2005 and to 367.1 billion won in 2009. Of which government subsidy increased 10.1% annually from 64.3 billion won to 148.3 billion won and to 152.4 billion won. And the amount self funded by the Korea Rural Community Corporation (KRC) decreased from 149.7 billion won to 124.9 billion won and then increased to 214.7 billion won in 2009, making the annual increase rate 4.1%. The money self funded by the KRC is composed of asset sales and income from incidental business operation. As the assets are transferred from the Farmland Improvement Association, they are the assets belonging to farmers. In other words, farmers were not exempt from the agricultural water use fee and the irrigation facility maintenance fee. Rather, they paid the fees for the lifetime use of these facilities in a lump sum with their assets. The problem is that the amount of the money required for maintenance is on the rise while the government subsidy remains at around 150 billion won. However, it is difficult to raise the government subsidy and it is also extremely difficult to increase asset sales and incidental business operation income.

Facility repair and improvement project is composed of disaster prevention reinforcement, function maintenance (worn out facility improvement) project, structuring of water channel made of dirt in plains, structure improvement for the existing water channels and creating a water friendly area near villages. Among them, the function maintenance project and the structure improvement for the existing water channels are carried out for the facilities below grade C of infrastructure safety inspection. According to the investigation of irrigation facilities controlled by the Korea Rural Community Corporation to figure out how many facilities will require repair and improvement by 2022 and how much cost will be required, the expected amounts for carrying out projects are as follows. 1) For the intake works project, 2.5312 trillion won is expected to be spent for 1,431 facilities requiring disaster prevention, 2.0879 trillion won for 2,899 facilities requiring function maintenance. When combined, 4.6191 trillion won is required for 4,330 facilities (32.9% of the total 13,145 facilities). 2) 5.8994 trillion won is expected to be necessary for 15,867km of water channels and drainage channel in plains project and 413.8 billion won in projects such as dredging, making the sub total 6.3132 billion won. In overall, 10.9323 trillion won will be required to conduct repair and improvement projects by 2022. The facility repair and improvement project which had been carried out until 2008 will be conducted in two stages, 1st stage (2009~2017) and 2nd stage (2008~2022). Irrigation facility repair and improvement project is crucial not only for disaster prevention and function maintenance but for maintenance cost reduction, water leak loss prevention and water use reduction. We need to conduct safety

inspections and field investigations for and expand the repair and improvement project to irrigation facilities controlled by municipal governments.

(3) Status and tasks of the maintenance system of agricultural water and irrigation facilities

One of the problems we found in the system of using and managing agricultural water and irrigation facilities is that there are too many laws and government departments concerned. Water quantity is dealt with by the Ministry of Land, Transportation and Maritime Affairs, water quality by the Ministry of Environment, disaster prevention by the Natural Emergency Management Agency (Ministry of Public Administration and Security) and agricultural water is controlled by the Ministry for Food, Agriculture, Forestry and Fisheries. And there are various laws related to agricultural water use such as the Rural and Fishing Village Improvement Act, the Framework Act on Environmental Policy, the Water Quality and Ecosystem Conservation Act, the Countermeasures against Natural Disasters Act, Act on the Prevention of and Countermeasures against Agricultural and Fishery Disasters and the Special Act on Safety Control for Infrastructure. It can invite following problems. First, laws are not well-connected with one another and as there is not an integrated law, there are difficulties in coordination and systematic water management. Second, the focus of most of the laws is more on water development such as construction of dams, reservoirs and water intake stations and less on demand management. Third, the gap between water quality targets and agricultural water quality

standards is not reflected in the Framework Act on Environmental Policy. Fourth, the Rural and Fishing Village Improvement Act does not have regulations related to irrigation rights of agricultural water and water quality management standards.

The project of development and use of water resources covers various areas such as water quantity management, water quality management, river management, groundwater management, dam construction, installation and management of water supply and drainage system and disaster management. For example, the Long-term Comprehensive Water Resource Plans was supposed to be set up for the overall water resources in accordance with the River Act, and the Plans for the Rational Utilization of Water in Agricultural and Fishing Villages should be set based on the Rural and Fishing Village Improvement Act for water used in agriculture. The problems found in the water resource related plans are that they are heavily focused on development and supply of water, and plans are not well-connected. And Plans for the Rational Utilization of Water in Agricultural and Fishing Villages was not set up and standards for water supply such as drought frequency were not included in plans.

According to management regulations of agricultural infrastructure, facility management is composed of maintenance management and safety management. And facility maintenance management is divided into facility management and water management, while safety management is composed of safety check, accurate safety inspection and safety measures. Agricultural water

management is divided into water quantity management, water quality management and disaster countermeasures, and facility management is divided into history management, inspection and repair. When it comes to maintenance cost for agricultural water and irrigation facilities, irrigation associations in the jurisdiction of local governments get financial supports from central and local governments, while for the facilities controlled by the Korea Rural Community Corporation, the entity which installed these facilities, the KRC should take the full responsibility and the government can provide supports. Moreover, government support for maintenance cost is not support for project expenses but support for ordinary expenses for farmers. Management system for agricultural water and irrigation facilities has the following problems; the absence of coordination body for various water management organizations, lack of rules on the scope of responsibility for facility management and on cost sharing, a dual management system for irrigation facilities for agricultural use (the KRC and local governments), and an equity issue about the burden borne by farmers.

We looked into the operation status of self-governing districts in the regions controlled by the Korea Rural Community Corporation and the maintenance status in the areas controlled by local government and the status of how irrigation associations operate. The regions under control of the KRC have following problems. They need to secure financial resources required for maintenance. As farmers are not engaged in water management, management costs for water channels located at the lowest end are high. Self-governing

districts are not composed autonomously and do not have clear role sharing. Also, participation of farmers and cost reduction effect are very low in self-governing districts. Irrigation facilities in the regions controlled by local governments are small in size and have little cold tolerance. Facility management by irrigation associations is poor as the numbers of irrigation associations and their members get smaller.

(4) Directions, goals and measures for efficient use and management of agricultural water

- 1) Basic directions and 3 goals and 6 tasks for efficient use and management of agricultural water

The basic policy directions for water resources and agricultural water are to meet water demands and provide services by efficiently using and managing water and irrigation facilities which were already available, instead of expanding water supply by constructing new facilities. The policy goals to achieve this are as follows. First, reduce the consumption of water in agriculture. Second, reduce maintenance costs for irrigation facilities. Third, maximize the use of the available facilities. Each policy goal has the following policy tasks. To reduce the consumption of agricultural water, you should conserve water in many areas and reduce the water loss such as water and drainage channels. So, the policy tasks are 1) the repair and improvement of irrigation facilities and 2) farmers' participation in water management organizations and water management activities. The policy tasks for the reduction of irrigation facility maintenance costs are 3) the improvement of irrigation facilities and 4) the

reform of management system. The goal of maximizing the use of the existing facilities has the following policy tasks; 5) the reuse of the existing facilities and 6) the use of water in multi purposes. Policy measures required to achieve three goals and six tasks can boil down to the improvement of irrigation facilities and reform of irrigation facility management system.

2) Policy measures for the efficient use and management of agricultural water

First of all, as it is necessary to improve irrigation facilities for agricultural use, we present the following policy measures. 1) Make structured and pipe type water and drainage channels. With this, we can gain the benefits of irrigation facility maintenance cost reduction, the prevention of water loss and the reduction of water use. Water and drainage channel structuring project should be created and pushed ahead with as a policy project. And investigations should be conducted for the candidate sites where the project will be conducted and project plans should be set up by year. Moreover, we need to introduce measures to expand pipe channels. 2) Enlarge / reconstruct or reuse the existing irrigation facilities. To this end, first, we need to carry out an investigation for all the irrigation facilities for which enlargement or reconstruction is possible, and subsidiary intake works and idle irrigation facilities which we can reuse. And then, we should select candidate sites after listening to local residents' opinion and conducting an environment impact assessment. For the sites to which the project will be assigned, we should prioritize them based on the effectiveness and

investment size and reflect the results in the official plan and then implement the projects on a yearly basis. 3) Use agricultural water in multi purposes. By using the agricultural water saved from the decreasing size of paddy fields, we can enjoy the benefits of making a better use of the currently available irrigation facilities, reducing the use of agricultural water and saving money for developing new facilities. For the multi-purpose use of agricultural water, we should select facilities for multi-purpose use after conducting an investigation into the reduction of benefited areas and the surplus of agricultural water by irrigation facility. Also, we need to identify whether there are demands for the multi-purpose use of agricultural water and what kinds of facilities will be necessary to use agricultural water for multi-purposes. Moreover, legal and financial reviews are required about issues concerning the irrigation rights which may come when we try to use agricultural water of irrigation facilities for purposes other than agriculture.

Second, as it is necessary to reform the maintenance system of agricultural water and irrigation facilities, we present the following policy measures. 1) Systemize plans for the development and use of agricultural water. To this end, the Plans for the Rational Utilization of Water in Agricultural and Fishing Villages, an official plan for the use and development of agricultural water must be set up. The basic directions and principles of development, use and supply of agricultural water must be prescribed in the plan. And the purpose of setting the plan, process and implementation plans, and repair plans for the necessary facilities must be established in a systematic

manner. Moreover, the supply and distribution plans for agricultural water should reflect drought frequency, so that it could help us respond to the unclear future such as climate change. And the plan should be aligned with higher level plans such as the Long-term Comprehensive Water Resource Plan and the Agriculture, Agricultural villages and Food Industry Development Basic Plan. 2) Provide the government support for irrigation facility maintenance cost in the form of project expenses support. The government provides approximately 150 billion won government support for irrigation facility maintenance. Yet, this support is not to lower the burden borne by farmers. It is maintenance expense for national infrastructure. Therefore, the support should be provided in the form of project expense support. To provide the support as project expense support, the items and costs of the project should be reviewed and calculated and then the size of the government subsidy should be determined. And the subsidy amount should be linked to the cost so that when the cost goes up, the subsidy increases accordingly. The government should be responsible for the maintenance of irrigation facilities such as intake works and main water channels. According to a survey for six branches of the Korea Rural Community Corporation, 70% of maintenance expense was spent on intake works and main water channels and 30% on branch lines and offsets. 3) Construct an integrated system for agricultural water management and decentralize the management of agricultural water responsibility. Currently, agricultural water management is carried out by both the Korea Rural Community Corporation and local governments. But we should make the KRC the only

organization in charge of agricultural water management. The responsibility for managing main water channels or water channels at a higher level than branch water channels should go to the KRC, while farmers' organizations should be responsible for managing water channels at a lower level than branch water channels or offsets. As a measure to give the responsibility for managing agricultural water to one organization, we recommend that all management responsibilities be integrated to an organization at the same time. And even after the integration, the maintenance subsidy and budget for repairing and improving irrigation facilities which local governments have provided should continue to be given to the KRC. As a measure to decentralize the management of agricultural water, we recommend that irrigation associations in the jurisdiction of local governments and farmers' self-governing districts in the regions controlled by the KRC be integrated to form a new farmers' organization in charge of water channels at the lowest end.

Researcher Nae-Won Oh, Sang-Jin Ma, Kwang-Sun Kim,
Chang-Ho Kim and In-Hey Kwon

E-mail naewonoh@krei.re.kr

Study Outline

Rural areas are facing a growing social and economic crisis such as dwindling and ageing population, declining economic power and lack of basic services. The government has thus far pushed ahead with various policies for rural areas. Yet, failed to narrow the gap with urban areas in quality of life and economic vitality, rural areas have continued to fall behind. Rural areas are experiencing both government failure and market failure.

Recently, efforts have been made to find out new ways to bring vitality to rural areas. That is to expand social enterprises in rural areas. Many researchers and activists recognize social enterprises as a means to promote endogenous rural development. Nevertheless, few studies have looked into the actual conditions and problems of social enterprises in rural areas and systematically analyzed the possibility of social enterprises to be a good strategy to revitalize rural areas.

This study aims to look into the actual state and problems of social enterprises which are located in rural areas or related to agriculture or rural areas, and to suggest ways how social enterprises can contribute to bring social and economic vitality to rural areas.

We set the following three goals for this study. First, we analyze the roles of social enterprises from the endogenous regional development and suggest measures for development. Second, we review the management state of social enterprises operating in rural areas and suggest ways to assess management performance. Third, we analyze the capabilities of social enterprises in rural areas and suggest policy tasks to strengthen the capabilities.

To achieve these goals, we conducted a wide range of field survey. Not confining the research subjects to the government-certified social enterprises, we surveyed a broad range of organizations which do business activities to realize social goals from a broader perspective. As survey method, we used both survey and in-depth case study. We surveyed 237 social enterprises including social enterprises, would-be social enterprises, self-support communities and 21 regional self-support centers. Based on the survey, we analyzed the conditions of social enterprises in rural areas from various angles and compared the results with those of social enterprises in urban areas. Through case studies on Hongseong-gun, Gangwon-do and Jinan-gun, Jeollabuk-do, we performed a more in-depth analysis on the establishment of social economy and the operation state of individual social enterprises.

Roles and measures of social enterprises for rural development

Just like the failure of nation and market led people to work hard to find out strategies for endogenous development of rural areas, part of the reasons for social enterprises to become an important issue is the failure of government and market. Also, strategies for

endogenous development pursue the values such as public interest, integrated approach, meeting the unsatisfied needs of residents, establishing a circulation structure of local economy and establishing a social capital. These values are no different from those which social enterprises want to realize, which means that fostering social enterprises can be an effective way to pursue endogenous development of rural areas.

This study analyzes what contributions social enterprises are making to the rural development from the endogenous development perspectives through an empirical study.

According to the analysis, rural social enterprises are contributing a lot to the establishment of circulation structure of local economy because social enterprises in rural areas, compared to their urban counterparts, are more embedded in the region in terms of input-output linkage, socio-economic network and labor input. Yet, as they are too much localized, rural social enterprises lack professional organizations or human resources.

The most crucial factor for the success of social enterprises was that they should be located in the same region with parent organization, which means that in order to foster social enterprises, social economy must be established in the region and organizations must be vitalized in advance. Also, both urban and rural social enterprises pursue creating jobs and income for general local residents rather than for the vulnerable class.

Social enterprises in rural areas have an average 22.4 employees, far higher than national average of 5.0. Moreover, 40.9% of rural social enterprises have a female CEO, which means they play an

important role to help women in rural areas participate in economic activities.

Business performance of rural social enterprises and economic support

As interest in social enterprises grows, a concern over their sustainability as company has been raised. The sustainability of social enterprises, however, should be evaluated in a different manner from other companies. That is because the ripple effects which social enterprises have made should be included in business performance based on which sustainability is assessed.

The survey shows that most of social enterprises in rural areas maintain a balance in earnings and expenses (90.3% reported a surplus or an income-expenditure balance). When it comes to gross income, business size of rural enterprises is small with an average 440 million won. In financial reliance which is the ratio of operating profit (sales) to gross income, they show an average 70%, higher than expected and not low compared to foreign counterparts. However, outside supports which account for 30% come mainly from the government while the portion of donation from the society or support from parent organizations is very low. So, the sustainability of social enterprises can be highly affected by government policy changes.

Social enterprises operating in rural areas have an average 22.4 employees and half of them are the less privileged, thereby significantly contributing to job creation and labor integration. Rural social enterprises have 5.0 employees for a 100 million won gross

income, higher than other companies. Yet, as the period of supporting social jobs funded by the government is determined every year, it can be a factor for unstable business.

The biggest difficulties which most social enterprises complain about are the difficulty of expanding investment and unfavorable market conditions. In general, as social enterprises' profitability is low, self-funding is difficult for them. And their business values are perceived poor from outside the company and they do not have enough collateral, making them difficult to access financial institutions. Moreover, conditions in rural areas are unfavorable for them to be competitive in the market such as lack of capital and technology, less efficient workers, customers without enough purchasing power and poor infrastructure.

All things considered, we make three policy tasks to financially support social enterprises in rural areas. First, support investment into social enterprises aligned with policies of government departments which are related to the business, and reduce the difficulty of raising fund by raising social investment fund. Second, by providing protected markets, improve market competitiveness of rural social enterprises. Third, after assessing their participation in activities to serve public interest, reward them with compensation.

Capabilities and tasks for social enterprises in rural areas

As social enterprises should achieve both public and profit purposes, they need special capabilities different from companies in the public and private sector. Especially, rural social enterprises which have too limited physical and human resources and little or

no experience of running a business need additional support for developing capabilities.

To analyze capability of social enterprises, this study divided it into five categories; vision and strategy, organization skill, human resources, organization structure and system, and organization culture. The outcomes of the analysis are as follows.

Social enterprises operating in rural areas have good capabilities in human resources, organization structure and system and organization culture but relatively less capabilities in vision and strategy and organization skill categories. In the process of setting plans for mid-and-long term business strategies, annual businesses, financial strategies and procurement plans, there are few jobs shared among employees, and they failed to set specific performance targets and indicators. Also, they do not have a solid relationship with various organizations in the region and support facilities in the public and private sectors.

There is no big capability gap between social enterprises in rural and urban areas. Yet, there is a gap in the network of organization skill and partnership. Compared to urban counterparts, rural social enterprises lack partnership and network among companies but have more exchanges with the public sector or non-profit organizations. The number of self-support communities which have potential to become a social enterprise is less in various areas, compared to certified social enterprises or would-be social enterprises.

We look into the systems provided by the public and private sectors to strengthen capabilities of social enterprises such as education, consulting, network and professional talent support. And

we found following problems. First, there is a shortage of systems which evaluate capabilities of social enterprises and support their capability development. Second, most of the available education programs do not reflect different nature by region or industry. And most of these training opportunities go to social entrepreneurs (CEO). So, mid-managers or employees on the field are given less opportunities to develop capabilities. Third, there are not many consulting bodies which can provide advices which fit with local situations where social enterprises are operating. Fourth, there are few networks where social enterprises in rural areas discuss obstacles they have and share know-how to overcome them, and the systems of nurturing social entrepreneurs are very weak in rural areas.

Policy tasks for fostering social enterprises in rural areas

First of all, we need to improve the government's monopolistic certification system to serve the meaning and purpose of social enterprises. Also, we should recognize various efforts made voluntarily in rural areas as activity to achieve social purposes. As for supports for social enterprises, rather than providing one-size-fits-all labor cost support, supports should be given aligned with activities they are doing and management difficulties they are suffering.

Second, we need to develop and disseminate appropriate business models suited to realities and conditions of rural areas. Especially, they need to enter production, distribution and processing businesses. But these businesses have high risks as competition gets fiercer in

the market. Therefore, the key task is to establish a business model which utilizes personal and material connections in the region. It may be difficult to make profits in culture and art areas in the short term, but as culture and art are very important sources to improve quality of life and regional competitiveness, we can design various business models on a premise of protected market.

Third, good cooperation among government departments and agencies is required to utilize various investment funds according to business. To attract private investment, the government needs to devise various ways such as encouraging social investment fund raising by proving fund of funds.

Lastly, we should identify private organizations and resident groups which have potentials and support them to become a social enterprise. Support systems for strengthening capabilities of rural social enterprises should be in place at central and local governments.

Researcher Byung-Joon Woo, Duk Huh and Hyun Joong Kim

E-mail bjwoo@krei.re.kr

This research investigated the domestic and foreign trend of farmed animal welfare and the policy direction of introducing farmed animal welfare to Korea. Introduction of farmed animal welfare to the Korean livestock industry is a future direction in many ways. Introducing a concept of farmed animal welfare is necessary to supply high-quality protein to the citizens, and to protect the sustainability of the livestock industry and guarantee the multi-functionality characteristics of agriculture.

With consumer survey results and previous research on changing production cost, this study shows that there can be an economic incentive to introducing animal welfare in the production phase. So far, however, we have no standard or guideline for farmed animal welfare. The result of this study is derived mostly from the data of “anti-biotic free” and “organic” licensed farms. Furthermore, expected changes in transportation and slaughtering costs are not derived due to data restriction. Thus, we still don’t have a clear picture about the economic efficiency of introducing farmed animal welfare.

When the inherent characteristics of public benefit and market failure of farmed animal welfare are considered, the government

needs to provide proper policy support to cure such problems. In this case of the consumer survey result, the expected price premium of animal welfare products can cover an increased production cost.

To introduce farmed animal welfare, this study proposes several policy options. Firstly, it is necessary to provide enough information to both producers and consumers since the research on farmed animal welfare is not adequate to provide scientific knowledge and proper government policy. Secondly, it is important to show a direction of future policy. The government is preparing to introduce a farmed animal welfare certification scheme to the market. However, producers and consumers don't have enough information about the certification scheme. Without any proper information, the market can not work efficiently. Thirdly, government intervention is very important to maximize social welfare. The government can choose several policy options, such as direct payment, adoption of a monitoring system, and setting up of certification standard. The economics principle indicates that an incentive system is the best solution to cure the existing market failure. Lastly, this study suggests the establishment of a new organization, tentatively named "Korea Animal Welfare Council," to discuss and manage domestic animal welfare issues.

Researcher Dong-Gyu Park, Myung-Hwan Sung, Young-Hoon Kim,
Mi-Sung Park, Yong Sagong and Jung-Hwan Lee

E-mail dgpark@krei.re.kr

The rice policy reform of 2004 was aimed at settling rice price according to the market principle and reaching a balance in the supply and demand of rice. After 2005, the cultivation area of rice was 70,000 ha/yearly more than the optimum level. Thus, without government intervention, there was the possibility of a significant decline in the price of rice. During the 2008 harvesting period, rice price increased 2.8% compared to the previous year. However, without government intervention, the price could have decreased by 15.8%. Due to the oversupply of rice, it was difficult to let the price be settled according to the market principle.

There are several factors to the oversupply, but it is analyzed that direct payment of rice affected the product a lot. For rice farmers to receive variable payment, they should meet the requirement to produce rice. The production increasing effect of variable payment is expected to be 34,000 ha. Also, fixed payment was planned to be production neutral, but it was analyzed to result in an increase of 18,000 ha. This econometric analysis coincides with a farmers survey which noted that fixed payment is a significant factor in the rice production decision making. 62% of surveyed farmers answered

that fixed payment affected their rice production. To stabilize the supply and demand of rice, direct payment should be constructed not to be linked with rice production, and the fact that direct payment is production neutral should be educated and promoted. As long as direct payment affects the production, it is not desirable to increase the unit cost.

The introduction of direct rice payment had a positive effect. In the 2009 harvesting period, rice price fell 12.3% from 2008, but the farm received price including direct payment resulted in a mere 4.5% decrease. Taking into consideration the direct payment compared to the 2005~2009 target price, farm received price was stable at the 98% level. Nonetheless, farmers showed sensitive reactions to the rice price. According to the relevant law, the future target price shall be adjusted taking into consideration the price change rate. Therefore, the farmers are sensitive to the price decrease and the government is forced to intervene. To solve this problem, the target price should be set on a long-term basis to improve the profitability of farmers and to enhance the reliability of the policy. It should be noted that the United States is keeping the target price that was used under the Farm Bill in 1996.

It is customary for rice farmers to sell rough rice and the decrease in rice price has significant effect on them. Farmers usually sell rice in rough rice and the price decrease of rough rice is greater than milled rice. But since rice direct payment is calculated based on milled rice, the direct payment level farmers get is quite less than the actual shortfall. Therefore, it is reasonable to change the calculation basis of the direct payment from milled rice price to

rough rice price.

To achieve food security, public stockholding was introduced, but there are problems, such as unclear criteria for setting the amount of rice to be stockpiled, the amount not being managed according to the criteria, and the revolving stockpile policy not being kept. Also, there was confusion between the public stockholding and the government stockholding for other use. Public reserved rice, therefore, should be calculated by converting the price of milled rice to the price of rough rice, and this will result in having approximately 10% price support effect.

Public stockholding should be limited to being reserved for the poor harvesting season and should be operated according to the original purpose. Public stockholding amount can be decided according to critical yield and shortfall probability. For example, if the critical yield, the point at which the public stock of rice is released, is set at 98 and the shortfall probability, which indicates the probability that can bear the shortage, is set at 6%, the stockholding ratio should be 16%. Also, the public reserved rice should be purchased through a bidding system to reduce the purchase price and administrative expenses.

In the meantime, the policy to stabilize the market after a temporary good harvest has not been reviewed during the rice policy reform session. For example, if the harvest increases about 5% compared to the average harvest amount, rice price can fall about 7%. Thus, the surplus amount of 5%, which is about 50,000 tons, should be excluded from the market to stabilize it.

The amount that should be reserved from the market depends on

how much of a decrease is tolerated. It has been analyzed that even if the tariffication of rice is introduced before 2014, there will be no rice import that exceeds the TRQ. Since the overproduction of rice is more of a concern, it may be beneficial to farmers and the country as a whole to reduce TRQ by introducing the tariffication earlier than scheduled.

A Study on Investment Behavior of Specialized Farm Households and Policy Implication

Researcher Joon-Kee Park, Eui-Sik Hwang, Mee-Bok Kim

E-mail jkpark@krei.re.kr

Investment into agriculture expands the size of business and increases productivity by introducing new technologies, thereby improving income and long-term growth potential. Investing in agriculture not just helps businesses expand their size but helps them continue to grow by making them manage and operate business rationally. Seasonal factors, low cash flow and various management risks are the obstacles hindering capital inflows to the agricultural sector, causing capital constraints both internally and externally. These adverse factors keep investment in agriculture below the optimal level.

As trade conditions for farming households get worse, profitability and added value of agriculture are falling. When looking into the structure of agriculture, as expectation for the future gets lower due to the ageing of agricultural population, investment in agriculture has been stagnant. However, some farming households with young laborers and capital have grown to large-sized and professional specialized farm households by making active investments, thereby becoming a key player in the agricultural sector. These specialized farm households look like an agricultural company running capital intensive businesses and their portions in

the production value of the total agriculture are growing dramatically.

From the agricultural business change perspective, we need to pay attention to the growing number of agriculture corporations (farming association corporation, agriculture corporation company). As large-sized, professional specialized farm households are leading growth in the agricultural sector and farming becomes more capital goods-oriented, agri-businesses will become more sensitive to discovering and investing in profitable items and fields.

The purpose of this study is 1) to investigate and analyze where and how much specialized farm households which emerged as a key player in agriculture have made agricultural investments, where they will invest, how they secure the necessary money, and what difficulties they have, and 2) to suggest measures to address internal and external capital constraints in the agricultural sector and to vitalize investment in agriculture.

Generally, specialized farm households have little understanding of business management. According to the survey of the actual state of keeping and utilizing books, the majority (54.5%) of farming households said they do not keep books and only 17.5% said that they believe ledgers are important data for decision making. Farming households which think the books are important are more likely to keep books and utilize business consulting, which means that they can run business rationally by using objective and diverse information. That explains why we should make efforts to raise awareness of business management including book-keeping. If we cannot accurately figure out the actual state of business of farming

households, we will not be able to relieve internal capital constraints and it will become an obstacle to the growth of agri-businesses.

The specialized farm households who are surveyed are willing to invest in the areas which are highly profitable or can generate added value such as livestock, floriculture or distribution facilities, and they believe that the outlook for these areas is bright. So, capital demand in these areas is expected to grow. Especially, many farming households want to switch from rice farming to livestock or floriculture. They are willing to invest in expanding the size of their businesses such as purchasing farm land and large size livestock while being reluctant to invest in facilities such as purchasing agricultural machine and modernizing farming facilities. Especially, most of them are very much interested in buying farming land, which means that capital demand for scaling up the farming size grows while few people want to invest in buying agricultural machine.

Due to the lack of collateral, even though young farmers have profitable investment plans, they cannot get the money they need. We need to increase the portion of business feasibility evaluation in the loan underwriting standards for agricultural fund, so that small-scale farming households which have little capital but have profitable business plans can get the funds.

When investing in agriculture, 72.2% of farming households who are surveyed use their own money or borrowed money from financial institutions, while 27.8% rely on policy funds (including subsidies). As they rely on loans from financial institutions to raise fund, their asset size is the most important factor in determining

how much money they can borrow. So, small scale farming households with little collateral suffer liquidity constraints. We need to find ways to allow them to utilize investment funds such as venture capital instead of relying only on indirect financing such as bank loan.

When asked about the biggest difficulties they have in agricultural investment, 30.1% said lack of policy fund support and 26.3% lack of collateral and 16.5% lack of their own capital. The difficulties they feel vary depending on their financial situations. We need to reform and improve institutions to give them more access to capital by expanding credit guarantee for those who lack capital and by easing the regulations to expand the scope of exercising property rights for those who are restricted in the use of collaterals.

66.0% of farming households said that they are willing to establish an agriculture corporation, a scaled-up agricultural business. They clearly understand that by forming an agriculture corporation, they will enjoy the benefits of growing profits and running businesses together. As agriculture corporations have the advantages of getting cooperation and capital relatively easier compared to farming households, we need to reform tax systems to vitalize agriculture corporations.

When looking into how much profits created from the agricultural sector go to non-agricultural sector, 36.4% of specialized farm households invest in the non-agricultural sector. Of them, 72.0% are large-sized farming households whose asset size is 300 million won or more. Most of them invest in real estate such as buying non-farming lands or houses, while most of small-scale farming

households invest in self-employed businesses.

According to the analysis of farming household survey and factors determining agricultural investment, farming households with little collateral face external capital constraints. They reduce their investment plans due to the difficulties of raising funds. Most of farming households heavily rely on loans backed by collateral such as bank loans or agricultural policy funds, their collateral is a key factor determining how much money they can borrow.

In order to vitalize investment in agriculture, we need to come up with solutions to ease the internal and external capital constraints. External capital constraints occur when financial institutions restrict the supply of capital to agriculture while internal capital constraints occur when farming households reduce the fund for agriculture due to their lack of risk management skill.

To relieve external capital constraints in the agricultural sector, following measures are required. First, expand fund support evaluation focusing on business feasibility. To boost investment in agriculture, agriculture businesses with little collateral should be allowed to get the money they need after going through business feasibility evaluation focusing on profitability and innovativeness. Second, introduce agricultural policy finance corporations. As commercial finance institutions try to avoid the risk coming from business feasibility test, capital constraints are inevitable. In the non-agricultural sector, capital constraint issues are being resolved by establishing policy finance corporations. Third, improve the current agricultural policy support systems. We need to enhance evaluation capabilities so that we can make investments in

businesses with prospective future according to business feasibility evaluation results. Fourth, diversify ways to supply funds. By introducing both loans from financial institutions and private investment, we can make it possible to get money from indirect financing and direct financing in the agricultural sector. Fifth, reform tax systems to vitalize business of agricultural corporations. As business scopes and organization sizes vary by corporation, we need to expand the scope of agricultural corporations to cover. Also, to make business more transparent, to make fund-raising easier and to boost business operation, we need to reform tax systems such as corporate income tax, acquisition tax and registration tax.

To relieve internal capital constraints, following measures are necessary. First, make a system to effectively manage business risks of farming households. We need to classify business risks to the risks which farming households can respond to and to the risks for which government intervention is inevitable. And to minimize the loss from the risks, we need to establish pre and post response systems. Second, establish an agricultural business consulting system focusing on financial management. We need to create an environment where farming households have easy access to consulting services which help them keep their finance sound and advise them about agricultural investment by providing financial diagnosis and forecast of future risks, credit evaluation, business feasibility evaluation and consulting about how and how much they raise funds. Moreover, we need to come up with support measures to foster professional manpower and to vitalize the consulting market. Third, enhance business management capabilities of farming

households. We should make aggressive efforts to boost their business management capabilities in many ways from basic management such as keeping books to seeking advice from consulting firms or experts when making important business decisions. Along with these efforts, to develop accounting standards for agriculture and standardized bookkeeping, the government, academia and relevant institutions should closely work together.

Researcher Yean-Jung Kim, Ki-Hwan Park,
Dae-Seok Seo and Hye-Sung Han
E-mail yjkim@krei.re.kr

A value chain analysis refers to the activities to find ways to minimize cost or to maximize profits in each phase from production to consumption, and to raise customer satisfaction to the highest level by utilizing the impacts of government policies, R&Ds, brands and product developments, and P.R.

Until recently, efforts have been confined to reducing cost for each of main activities from manufacturing, processing, and distribution, to consumption. However, since the different phases were not connected with one another, there have been limitations to the creation of add-values. Besides that, there have been almost no researches into the impacts of the supporting activities such as government policies, R&Ds, brands and product developments, and P.R. on producers' income growth as well as those into value addition which takes place when production system reflects consumer needs.

In this analysis, value chain by item was divided into main and supporting activities in accordance with the Michael Eugene Porter's theory. The main activities refer to the phases of production (seeds · seedlings · agricultural products), distribution (sorting · processing · packaging), consumption, and exports while the supporting activities

are mostly focused on P.R., brands reflecting consumption trends and developments of new products, marketing activities, R&Ds and government policies.

The results of value addition by the main and supporting activities for major items are as follows. Firstly, rice yield has improved thanks to the development of cultivation techniques and new varieties in the production phase. The annual production cost per 10a increased by 2.6%, from KRW 458,240 in 1997 to KRW 624,970 in 2009, and the production cost per 80kg rose by 2.3%, which indicates that technical development and new varieties pushed up rice productivity.

The higher utilization of machines and development of direct planting techniques also help reduce production cost. If the common places for raising seedlings expand especially when using machines is impossible such as nursery and hotbed planting, and delegations of farming duties increase, boosting the usage rate of machines, the labor force will be reduced by up to 40%. In addition to that, if the cultivation type shifts from the current transplantation of seedlings by machines to direct planting, the labor force required will be 25% less, saving production cost by 7.5% per 10a.

In the phase of harvesting, economies of scale will contribute to cost reduction. Generally, rices which are harvested by small and medium sized combines are put in PP sacks and then transferred to farms or drying places by cultivators or 1-ton trucks. But, if rices are harvested by large combines, they are transferred in the form of ton bags, which means that delivery cost per kg will go down.

In terms of the economic impacts of rice R&Ds, one of the

supporting activities, the total economic value of the development of machines for rice cultivation without rice seedbeds turned out to be whopping KRW 689.9 billion. (input cost : KRW 58.4 billion)

In order to increase the commercial value of rice, brands and packaging should fulfill consumer demands. Consumers pay differently for each brand and packaging prices vary. Therefore, the creation of high value-added requires the development of products which reflect consumers' preferences.

Secondly, in the case of tomatoes, the development of harvesting technologies will also result in cost reduction. In the phase of harvesting, labor cost takes up a large portion (29.8%) of the cost. But, usage of elevated hydroponic cultivation technology will reduce the labor cost. In addition to that, although heating cost for tomato cultivation is high since tomatoes are thermophilic fruits, the newly introduced geothermal heat pump system helps reduce the cost.

Simplification of transactions are likely to lead to less distribution cost and higher consumer utility. In the current distribution process, farm prices per kg are KRW 2,545 and consumer prices are KRW 5,000. But, a direct transaction takes place, farmers will earn up to KRW 2,455 more per kg. If tomatoes are sold for KRW 3,200 to end users, farm prices will jump by KRW 655 while consumers will pay 1,800 less for the same amount.

Another supporting activity, R&Ds for seeds, will improve the quantity supplied and the safety of agricultural production. To be specific, the technological development for tomato breeding is expected to increase the distribution rate of domestic and functional varieties by up to 30% while continued R&D activities will reduce

production cost and ensure the provision of high-quality and safe agricultural products.

In the meantime, although oversupply of agricultural products could lead to price drop and decreases in farmers' incomes, tomatoes avoided the risk thanks to the ads by the self-funding association. Without the ads for boosting consumption and P.R. activities, the expansion of the cultivation areas was expected to cause prices to drop by 14.3% and farmers' incomes by 23.5%. However, thanks to the ads aimed to boost consumption, wholesale prices fell only by 4%p and farmers' incomes by 10.3%p per 10a.

Thirdly, in the case of oyster mushrooms, if the production type of culture on beds is changed to bottle-type cultivation, productivity will go up. the productivity per unit area of bottle-type cultivation turned out more than two times that of culture on beds and its labor cost (14%) was also lower than that of culture on beds (35%). On top of that, the bottle cultivation helps reduce production cost per kg by improving productivity.

The change of raw materials and sterilization methods for mushroom spawn will also push down production cost for oysterm mushrooms. In the phase of raw materials and spawn sterilization, cottonseed meal for mushroom medium was replaced by kapok meal and tax-exempted oil by electric steam boilers, which resulted in cost reduction.

Researcher Soo-Suk Kim, Gyu-Cheon Lee, Kwang-Soo Kim

E-mail soosuk@krei.re.kr

This study aims to analyze implementation status of local agricultural policy and operation of governance of agricultural policy for the purpose of suggesting methods for improving the rationale and effectiveness in implementation of local agricultural policy and advancing governance of agricultural policy that includes practical participation in decision making.

Contents of the study include theory on governance, current status of implementation of local agricultural policy and operation of governance of agricultural policy, relevant system in other countries and methods for improving systems.

In theory on governance, civil society theory of Gramsci and public sphere theory of Habermas were analyzed as a theoretical basis for governance, and corporatism theory was examined as a historic and realistic basis. And policy participation theory that suggests policy conceptualization of governance and stages by type of governance was examined, and a modern new governance theory that emerged as a policy option at national administrative level was also examined.

In studying implementation of local agricultural policy, problems in current implementation and execution of agricultural policy were

analyzed. And the study shows that city and county councils which are responsible for local agricultural policy are not able to fully understand full account of agricultural, forestry and fisheries projects and agricultural policy finance that are invested and financed in the region concerned, and to link subsidy and finance.

Budget program that is managed by city and county goes through a perfunctory procedure in which priority of program implementer is determined by agricultural policy deliberation committee, however, loan program that is mainly led by Nonghyup does not have to go through such procedure.

Agricultural policy organizations in city and county that carry out subsidizing program in agricultural, forestry and fisheries and city and county's own program as well as ordinary works related to agricultural policy are not able to fully implement their tasks due to excessive workload.

To understand implementation status of local governance of agricultural policy, cases of governance of agriculture and rural area that are administered on a voluntary basis depending on the region and administration status of agricultural policy deliberation committee were surveyed and analyzed. Agricultural policy deliberation committee, as a legal governance of agricultural policy is institutionalized by regional unit, and city and county agricultural policy deliberation committee is being administered at basic unit of local government, however, in practice, city and county agricultural policy deliberation committee is not being administered as was planned, and the system that is under operation is no more than formality at that.

For studying cases related to local agricultural policy and governance of agricultural policy in other countries, local agricultural policy bureau in Japan, chamber of agriculture in three European countries, urban-rural agricultural extension council of France and LEADER program of EU were surveyed and analyzed. Local agricultural policy bureau of Japan is an agency of Japan's Ministry of Agriculture, Forestry and Fisheries, which implements policies that the Ministry sets in accordance with local circumstances. Japan basically recognizes local execution organization in which central government takes charge of projects that local government finds difficult to plan and execute.

Chamber of agriculture of Germany, Austria and France has commonality in that they all were established by public law, and they are self organization of those engaging in agricultural and forestry area, and finally their area of work is services for farmers including agricultural technology, management extension and occupational education. At the same time, these organizations are different in terms of organizational structure, and in particular, in the type of governance that cooperates with local governments. Governance type of Germany takes the form of privatization of agricultural policy execution work, governance type of Austria takes the form of vicarious execution of project fund (direct payment) management, and France shows the characteristics as local agricultural policy deliberation committee.

Lessons to be learned from urban-rural agricultural extension council include the fact that establishment of local development plan and determination of priority in investment and finance in local

agriculture should not be decided by central government or market mechanism, but by internal discussion in the region in a autonomous and democratic manner. Urban-rural agricultural extension council is structured in a similar way with Policy Deliberation Committee for Agriculture and Fisheries, Rural and Fishing Village, and Food Industry, but it is acting as an effective governance after becoming a deliberation organization in practice.

LEADER program of EU shows that introduction of innovative small-scale development program is needed for nurturing potential ability of rural areas. This, in particular, can be used as a basis for establishing governance related to agriculture and rural area. In other words, capacity that is needed for establishing governance system can be built by making agricultural community in a region carry out regional development program.

Method for improving system for advancement of local governance of agricultural policy consists of method for re-organizing implementation system of local agricultural policy and innovating governance. Method for re-organizing implementation system of local agricultural policy is to reshuffle

current implementation system of agricultural and fishery project that takes the form of supporting project into one that focuses on division of agricultural policy works that takes into account the nature and spill-over effect of the project executed.

In other words, current implementation system of agricultural policy that manages subsidizing program and loan program is re-organized into one that manages central affairs and local affairs. And for an effective management and execution of central affairs,

namely 'Local Agricultural Agency' (tentative) that exists at city and county unit is established.

When it comes to implementation of local affairs in agricultural, forestry and fisheries project, local governments will have greater discretionary power for project implementation. Local governments will select and enforce projects that are suitable for their regional situations by allocating budget for, executing, managing and supervising the specific project, whereas the Ministry for Food, Agriculture, Forestry and Fisheries decide whether or not to maintain the project through monitoring and post-evaluation. In addition, for the sake of democratic and fair implementation of local affairs, local governance of agricultural policy that practically takes part in decision making process of agricultural policy deliberation is newly established or re-organized.

Ways for improving local governance of agricultural policy include first, improving systematic administration of agricultural policy deliberation committee and second, developing policy program that supports and nurtures governance of agriculture and rural area that is voluntarily administered depending on region. More ultimate method than advancement of local governance of agricultural policy is to make sure that governance at regional unit related to execution of local agricultural policy is spearheaded by those engaging in agriculture and fishing.

This can be made possible through establishment of chamber of agriculture, which is an organization that represents farmers and fishermen. In other words, the foundation for autonomous governance of agricultural policy is laid through establishment of

chamber of agriculture, and governance of practical participation in policy is created through collection of opinions about activities (forms) of agricultural policy governance by chamber of agriculture.

A Research for the Establishment of Regional Economic Model for Supporting the Decision-making Process of Local Self-governments

Researcher Si-Hyun Park, Suk-Ho Han, Jeong-Min Lee, In-Hye Kwon

E-mail shpark@krei.re.kr

Background and Purpose of the Study

Decision making authority at local government level is expanding, but in many cases, decision making on regional development are based upon information that are not scientific and systematic. For example, in regional planning at city and county level, various indicators (including population, income, industrial production, finance and employment) and development target that constitute the basis for the planning are made of simple calculation or intuitive judgement. In addition, analysis of what impact a certain project implemented has on the local economy has not been properly carried out, and even if it was conducted, it was not based upon an appropriate method.

Decision making authority at local government level will further increase in the future, while decision making environment at local government level will also become more complicated and uncertain. Against such backdrop, creating a proper environment that can enable local governments to make a desirable decision is an important task of the future.

The purpose of this study is to establish regional economic model to support decision making for regional development at city and

county level. Model constitutes a significant part of decision-making support system. Establishment of model in this study is a preparatory stage for establishment of support system for decision making on regional development at city and county level. For such purpose, the study looked at the theory related to model and cases of establishing leading model as a preliminary discussion stage. And then the study established regional economic model for regional economy at city and county level (referred to as KREI-REMO in this study). Lastly, the study discussed the usefulness and way for development of the model established.

Theory related to Regional Economic Model and Cases of Establishing Such Model

The study looked at merits and demerits of each structural model and non-structural model. It considered the possibility of combining them as both of them have their respective merits. In other words, structural model is superior to non-structural model from a theoretical aspect, while non-structural model is better than structural model in terms of composition and forecasting ability of the model.

Factors that have to be taken into account when establishing or developing model in a region include model's consistency with theory, practicality and execution ability of model. Satisfying these three factors at the same time is not easy. The study considered that actually establishing the model amounts to striking a right balance between these three factors.

Regional economic model is divided into three types of general equilibrium model, input-output model and econometric model. As

these three models have their respective merits and demerits, sometimes composition model is used taking into account advantages and limits of each model.

The model that this study plans to establish is regional econometric model. The study looked at regional econometric models established by other countries, and thereby learning lessons about regional econometric model that it plans to establish. The study also looked at Show-Me model of the U.S., and the characteristics and limits in application of KREA model that was applied in Korea based upon it. In addition to it, the study also looked at regional econometric model of Japan and EU, model by Bank of Korea and regional econometric model applied at city and county level.

Lessons from Previous Models

In case of small regional unit of city and county in Korea, access to the available data is limited, posing difficulty in applying CGE model based upon Walras' s theory of general equilibrium and also using regional input-output model. This study adopted regional econometric model whose composition is flexible and poses relatively less limits in accessing data through utilization of proxy variable and lagged variable.

KREI-REMO basically establishes structural model that is based upon regional economic theory after reviewing merits and demerits of structural model and non-structural model, while for some casual relations which are not backed up the data, characteristics of non-structural model including local lag variable is partially

incorporated when individual equation is calculated as this method is believed to enhance the practicality and performativity of model.

Establishment of KREI-REMO Model

Regions for which the model will be applied include 161 cities and counties of 163 cities and counties of Korea except 2 cities and counties without autonomy in Jeju Island. 161 cities and counties were divided into 'city-type', 'rural-urban linkage type' and 'agriculture/mountain/fishery type', and 3 equations were created.

KREI-REMO was established based upon dynamic model rather than static model. The purpose of establishing model is to forecast macro indicator in regional economy and allow for policy simulation. As for individual equations contained in the model, parameter was estimated through dynamic panel data analysis using panel data, not cross-sectional data, thereby improving the limit in less trustworthy parameter estimation of the past that is based upon cross-sectional data.

Population model was made in a way that simulation for economic shock is possible by using cohort population model and reflecting rate of leaving farm, characteristics of population change. For the convenience of operator of the model, excel model that uses excel algorithm of FAPRI at University of Missouri-Columbia was adopted.

Model is composed of population block, employment block, industrial production block, agricultural block and regional finance block. Composition of each block was determined taking into consideration economic theory, previous study and accessible data.

According to principle, data that were used for model are collected from 1995 to 2010. There were cases when recent data were not available for some category, in which case panel analysis was conducted through available data.

For estimated parameter value, many variables showed a meaningful value at a level of 95%. dissymmetry factor of MAPE and Theil was presented for verification of model's ability to predict, and bias proportion, variance proportion and covariance proportion were additionally presented to identify the root cause of discrepancy between real value and predictive value. Verification of model's ability to predict suggest that prediction ability of the model is believed to be good, with dissymmetry factor of Tael standing between 0.05 and 0.11.

Established KREI-REMO was made in the form of excel so as to ensure easy use by those people who do not know how to use statistics and measurement program well, and method for operation and modification of the model was explained separately.

Usefulness and Future Direction for Development of Model

Usefulness of established KREI-REMO depends on how well the change in regional economy is predicted as a result of outlook for future regional economy and changing policy. The study examined the model's predicting ability and usefulness in decision making process for regional development based upon the result of baseline prediction for some regions and policy-simulation.

As a baseline prediction, regional economy of Sangju city, which is a rural-urban combination type was comprehensively predicted,

and baseline prediction of urban region (Gyeongju city) and agricultural, mountains and fishing area (Koryeong county) were compared. For policy simulation, effects of policy project resulting from building of National Agricultural Resources Center in Sangju city were analyzed. This study also examined the strategy to increase population by Youngcheon city in North Gyeongsang province as a reference to a possible regional development strategy through prediction data that this model provides and policy simulation.

Limits of the model cited include failure to publish GRDP data which is an important explanatory factor in some regions, inaccessibility to data that can calculate rate of leaving farm and insufficient linkage to KREI-KASMO in agricultural block along with failure to accurately reflect region's unique circumstances resulting from dividing cities and counties of the entire nation into 3 big categories.

Lastly, ultimate goal of establishing KREI-REMO is to function as a part of support system for decision making at city and county level. KREI-REMO that was established by this study constitutes a only a small part of support system for decision making at city and county level, and from a perspective of operation of entire system, it is only at an early stage.

It was noted that continuous works have been done to improve composition of model, policy simulation method and way to express results so that the model can be easily applied and widely utilized in internal improvement work for the established model and changing decision making environment at cities and counties in rural area.

Result of Outlook for Population

This study predicted future population change for 121 cities and counties across the nation by using three measurement methods, namely, cohort survival model, cohort analysis model that reflects social population movement in cohort survival model and trend extension model that applies average rate of leaving farm. Measurement of population in cities and counties of the nation was tried for the first time by this study, whose result can be used as an important data separate from regional economic model.

A Study on Evaluation and Development Measures for Vertical Linkage in Livestock Sector

Researcher Min-kook Jeong, Myeong-Ki Lee,
Hyun-Joong Kim and Hyung-Woo Lee

E-mail mkjeong@krei.re.kr

The market opening is being expanded due to DDA negotiations and FTAs. Therefore, the competition between domestic livestock products and imported goods is expected to be intensified. The argument for improving the competitiveness of the livestock industry through vertical linkage has been raised to respond to the market opening. The purpose of this study is to analyze the performance and problems of vertical linkage in the livestock sector and present proper policy directions and measures to promote the vertical linkage.

The highlights of this study are summarized as follows:

First, the vertical linkage, the comprehensive concept that explains various forms of economic activity and transactions, is defined as follows. Vertical linkage is “economic activity linking each step of the vertical economic flow from investment to production, processing, distribution, and consumption”. The types of vertical linkage are classified according to the degree of ownership and control. At the lowest level is marketing contract, followed by production contract, partnership, and vertical integration at the highest end.

Second, the strengths of vertical linkage are as follows: It effectively reduces the risks that are common to all farms. A big incentive for technological development improves the performance of vertical linkage and reduces the transaction cost of renewing a contract due to technological advancement. Also, the room for the integrator to act opportunistically is reduced. The disadvantage is that uncertainty increases since individual farm's income is affected by other farms' performance and changes depending on the evaluated group.

Third, the problems of vertical linkage in the broiler industry are as follows: Since the integrators have not made sufficient investment for improving breeders' productivity, farmers complain about the quality of chicks. Also, the quality of feed varies depending on the origin of feed ingredients and crop quality. Because there are not proper countermeasures for bankrupt companies, much damage has been done to farmers. Since consumers usually buy the whole chicken for household consumption, the development of various chicken products is insufficient.

Fourth, the problems of vertical linkage in the pork industry in different production stages are as follows: improper control of diseases, inadequate system to distribute good sows, and the difficulty of securing uniform quality of breeding pigs and feed in the fattening stage; the lack of contract fattening farms, too small and aged farm facilities, low farm productivity, and conflict between the integrators and contract fattening farms in the fattening stage; limited space and poor sanitation at slaughtering facilities in the slaughtering and processing stage; and the difficulty in developing

and expanding the integrators' sales channel and the seasonal supply and demand imbalance in the distribution and consumption stage.

Fifth, the results of a survey of broiler farms were as follows: The main motives for broiler farms to contract with the integrators are 'to secure a stable sales channel of broilers', 'reduction of broiler price volatility and income risk,' and 'stable supply of feed, chicks, and production materials'. The issues to be dealt with for the development of the broiler industry are 'enhancement of disease management at breeder farms and hatcheries', 'the commitment for standard contracts', and 'guaranteed fees for raising broilers'. The results of an analysis on the productivity of broiler farms show that the productivity of contract farms is higher than that of independent farms. In order to improve the productivity, it is necessary to improve the facility, manage risks, and participate in consulting and training programs.

Sixth, the results of a survey of pig farms show that the productivity of contract farms is higher than independent farms but is very low compared to major exporting countries. Pig farms make contracts with the integrators to secure the sales channel of grown pigs and minimize the risk of price volatility.

Seventh, the major results of an empirical analysis on the issues of vertical linkage in the livestock industry are as follows: The result of an expected profit maximization model shows that input quality, broiler farms' performance, and the integrator's profit with a relative performance scheme are higher than those with an absolute performance scheme. The study used real data and analyzed the claim that the relative performance scheme of evaluating farms'

performance without the upper and lower 10% of the farms is disadvantageous to the left-out farms. The result shows that the farmers' claim is valid. Also, we show that the low investment problem exists when the market structure is not competitive and when farms have the experience of receiving the integrator's demand to meet certain conditions for contract extension.

Finally, the development directions of vertical linkage for the livestock industry are as follows: Confidence building between the integrators and contract farms should take precedence. Based on this confidence, the integrators should increase productivity by developing a Korean breeding stock. Also, the integrators should increase bargaining power and expand consumption by producing high value-added, high-quality livestock products and by developing various processed meat products. Also, contract farms' income should get stabilized. To do this, the government should first lay down the legal basis for policy measures to promote vertical linkage in the livestock industry. Second, the integrators and contract farms should build a win-win relationship and make written standard contracts. Third, the vertical linkage of private companies and the vertical linkage of cooperatives should be developed equally. Fourth, the integrators should expand investment and strengthen bargaining power. Lastly, industry development plans should be made and implemented for each sector of the livestock industry.

A Study on Developing Tripartite Food Safety Cooperation among Korea, China and Japan

Researcher Yun-Jae Hwang, Hyoung-Jin Jeon and Jae-Hwan Han

E-mail yjhwang@krei.re.kr

Korea, China and Japan are experiencing more frequent outbreaks of food safety incidents amid growing agri-food trade among them. This has intensified consumer concerns about food safety. In some cases, the outbreak of food safety incidents has led to diplomatic frictions. In the wake of these developments, the voice asking for action plans to deal with the food safety issue grows stronger, and the trade volume of agri-foods among the three countries is likely to rise in the years to come. The importation of Chinese agri-foods is anticipated to surge in view of their geographical location and price advantage. Under such situation, the need for closer international cooperation to secure food safety is greater now than ever before for the three countries. With a clear view of this, this study aims to suggest practical action plans promoting tripartite cooperation for agri-food safety among Korea, China and Japan.

To ensure agri-food safety, the trading countries are running temporary and constant cooperation schemes to resolve issues associated with imported or exported agri-foods. Temporary cooperation is mainly conducted as a reaction to incidents, while constant cooperation is consistently available regardless of the outbreak of incidents. Temporary cooperation is mainly aimed at

addressing incidents, but this can not easily be achieved at all times and is not sufficient to effectively tackle food safety incidents. In comparison, constant cooperation is based on the existing bilateral cooperation system and the trust formed through previous cooperation. When food safety incidents occur, constant cooperation facilitates prompt reaction and the effort to strengthen food safety. Until recently, Korea, China and Japan have i) executed treaties, ii) organized cooperative councils and meetings, and iii) started exchange programs including human resources exchange as part of the endeavor to build a constant cooperative relationship regarding agri-food safety.

In the future, the existing tripartite cooperation among Korea, China and Japan in the area of agri-food safety needs to be further supported by i) a proactive approach toward agri-food safety; ii) the seeking of practical ways for cooperation on food safety; and iii) orderly international trade based on WTO/SPS agreements, etc. In order to implement the above three basic principles, the three countries should i) harmonize mutual institutions and standards on food safety; ii) upgrade the existing cooperative arrangements on food safety; and iii) reinforce the framework to support projects requiring mutual cooperation.

Elaborating more on the four action plans listed above, first, the alignment of the three countries' institutions and standards on food safety will smoothen food safety cooperation down the road. The discrepancy in the hazardous substance residue standards and the homogeneity of food safety institutions of the three countries have been consistently brought up as matters for further discussion. The

standards for hazardous substance residue can be set relatively easily in reference to international standards. However, harmonizing food safety institutions among the countries will have a considerable impact on trade, so this needs to be pursued over a long haul.

Second, the information sharing about food safety is an essential precondition to enable a country to speed up its response to food safety issues internally and foster smooth cooperation internationally both in normal times and in the event of a food safety incident. Also, food safety cooperation involves various channels at home and abroad, including the government and the private sector. Identifying and fine-tuning related cooperation channels is helpful for more concrete and systematic pursuit of cooperation for food safety. The inter-country channel takes a longer time to be rearranged, and this is understandable considering the fact that even the Ministry for Food, Agriculture, Forestry, and Fisheries and the Ministry of Health and Welfare (Korea Food and Drug Administration) establish and adjust their food safety cooperation system only when there is a national need and only when there is mutual understanding at the ministry level. Therefore, securing an inter-country channel should be viewed as a mid/long-term project based on thorough planning. Yet, the creation of the cooperation channels between the private and public sectors and the working-level exchanges on food safety are achievable within a short time.

Third, the tripartite cooperation is still in the early stage. Details are not laid out at this moment. Signing valid treaties seems to be able to lay the foundation for substantial cooperation projects. In addition, various needs for cooperation and supporting systems

should be identified and secured. To this end, i) food safety cooperation treaties should be checked for their validity and made sure that they remain valid; ii) cooperation projects should be diversified and the demand for customized mutual cooperation should be identified; and iii) local supporting system for importing country should be in place to proactively secure agri-food safety and facilitate international cooperation. The support foundation for these efforts could be established within a relatively short time. However, securing the validity of food safety cooperation treaties and the construction of local support systems in an importing country demand mutual understanding of relevant countries, and to achieve this, active government engagement is necessary.

Researcher Sei-Kyun Choi, Myong-Keun Eor, Hyoung-Jin Jeon, Dae Hee Chung

E-mail skchoi@krei.re.kr

Korea has already completed FTA negotiations with 45 countries including the U.S., EU, ASEAN and India, and it intends to conclude FTA negotiations with Canada, Mexico, Colombia, Australia, New Zealand, and Turkey. The remaining major economies scheduled to negotiate with are China, Japan, Russia, and Brazil. In the short run, FTA negotiations will start or resume with China and Japan. The FTA negotiations with Turkey began in 2010.

The outcome of FTA negotiations of some countries may affect future negotiations and it is important to analyze the negotiation partners' previous cases. The major objectives of this study are to analyze the outcome of previous FTA negotiations of Korea's major negotiation partners and provide information for future negotiations with the major partners.

China provided trade opportunities to ASEAN and Taiwan in consideration of regional political and security measures. However, China tried to protect some agricultural commodities, such as grains, sugar, oilseed, and tobacco, in the name of food security and to protect its rural economy. On the other hand, China kept a defensive position during its negotiations with Chile and New Zealand. China

has a list of commodity exceptions for its trade agreement with Chile, while Chile conceded almost all items. A similar list of commodity exceptions was also made for trade negotiations with New Zealand.

The Japan-Mexico EPA has a low level of tariff elimination rates for agricultural products. Tariff elimination rates are 48.9 percent for Japan and 57.1 percent for Mexico. TRQ concession has been widely introduced to compensate for the low tariff elimination level. Japan expanded market opening for agriculture in the Japan-Chile FTA. Japan did not resort to market protection for fruits despite Chile's high competitiveness. However, Japan did not concede most grains and dairy products. Japan further expanded its agricultural market through the Japan-Thailand EPA. Concession rates are increased and the exception list is significantly reduced. However, a lot of major commodities are found on the exception list as high tariff items.

Turkey tends to take up a request-offer formula. Turkey's interests are focused on hazelnuts, figs, cherry, dried apricots, soybean oil, sunflower oil, and corn oil. Major concerns are also given to confectionery, chocolates, pasta, bakery, cucumber, fruits, and fruit juice. Tariffs are reduced partially, e.g. 15 percent or 50 percent, within the agreed quantity of imports. The Turkey-Morocco FTA represents a low level of market opening for Turkey. Turkey provides small TRQ for limited items to Morocco and maintains applied tariff rates for major commodities instead of tariff elimination. Turkey expanded agricultural market liberalization to the EU. Tariffs are eliminated for most of the agricultural products

except for some sensitive items. Partial reduction of tariffs instead of elimination, tariff ceiling or seasonal tariff systems are introduced for sensitive commodities to minimize negative impacts on the agricultural sector.

Rules of origin are key factors in achieving preferential trade agreements such as FTAs. Qualifications of originating goods can be divided into two categories: one is wholly obtained and the other is not wholly obtained, i.e. goods produced with imported materials. In the case of China, vegetables harvested in one country are treated as wholly obtained. Animal products and live animals are accepted to be wholly obtained when both born and raised or when raised. In the case of the China-Taiwan and China-ASEAN FTA, the born and raised criterion is applied. The “raised” criterion is accepted in the case of the China-Chile and the China-New Zealand FTA. Changes in the tariff classification criterion and the value added criterion are generally applied for the goods produced with non-originating materials. For the criterion of changes in tariff classification, HS 2 digit level(chapter) is widely applied and HS 4 or 6 digit levels are used as supplements. Regional value added of 40 to 50 percent is a minimum for the acceptance as originating goods. De minimis of 8 to 10 percent and bilateral cumulations are accepted in China’s FTA.

In the case of Japan, vegetable goods harvested in one country are treated as wholly obtained. In the case of the Japan-Mexico FTA, the born and raised criterion is applied for live animals and animal products. The “raised” criterion is accepted in the case of Japan-Chile and Japan-Thailand FTA. Changes in the tariff

classification criterion is more widely applied than the value added criterion for the goods produced with non-originating materials. For the criterion of changes in tariff classification, HS 2 digit level(chapter) is widely applied and HS 4 or 6 digit levels are used as supplements. The regional value added of 30 to 55 percent is a minimum for the acceptance as originating goods. De minimis of 7 to 10 percent and bilateral cumulation are accepted in Japan's FTA.

Turkey accepts vegetable goods as wholly obtained when harvested in one country. For live animals and animal products, the born and raised criterion is accepted. Changes in the tariff classification criterion is applied solely or together with the value added criterion. De minimis of 10 percent and diagonal cumulation are accepted in Turkey's FTA.

Korea needs to maximize exceptions of market opening for sensitive agricultural products for the negotiation with China and Turkey. China's early harvest program can be a benchmark for Korea to present an active position and preserve sensitivities. Various supplementary measures against possible negative impacts from coming FTA negotiations need to be introduced in the agreements. Cooperation programs in agriculture and rural areas can be positively considered as one of FTA policy strategies.

Korea needs to keep strict rules of origin for fresh agricultural products. The standards of "planted and harvested" for vegetable products and the "born and raised" for animal products are strongly requested to be maintained as Korea's position. For the changes in tariff classification, HS 2 digit level will be better to protect fresh products while HS 4 to 6 digit level can be positively considered for

processed food. Exceptions of de minimis application need to be introduced for agricultural products. Due restrictions on non tariff measures including embargo and subsidies also need to be included in FTA. Special treatments for agricultural products are requested in government procurement agreements.

A Strategy for Agricultural Technology Transfer to Developing Countries under the OECD/DAC Regime

Researcher Kyeong-Duk Kim, Jeong-Seung Kim

E-mail kdkim@krei.re.kr

Korean government policy direction for ODA has been changed since November 2009 when the Korea became a member of OECD/DAC. The new-basic objective of Korean ODA would be focusing on the BHN (Basic Human-Being Needs) with enhancing human-beings dignity and poverty reduction related to a basic guidance of OECD/DAC. Therefore the international cooperation in the Korean agricultural sector could be also adjusted to the above changes.

One of effective strategies of international cooperation of Korean agricultural sector under the OECD/DAC regime could be promoting “technology transfer” to developing countries. Especially the free-standing technology transfer is treated as untied aids. The technology transfer could be the most effective strategy for beginners of OECD/DAC member. Furthermore, Korea could be in the middle position of technology location which implies Korea has a comparative advantage of technology transfer to developing countries.

In this report, demands for technology transfer of developing countries and the feasibility of Korean technology to satisfy needs of receipts is analyzed. Optimal strategies of technical transfer and the system for strategic transfer would be also analyzed.

Researcher Byung-Ok Choi, Chang-Gon Jeon, Dong-Hoon Kim

E-mail bochoi@krei.re.kr

This study is aimed at finding methods to efficiently use agricultural production facilities by figuring out the operating ratio of sorting and cold storage systems operated by agricultural organizations and by evaluating the efficiency of agricultural production facilities.

Along with the changes in the agricultural distribution environment, the government policies on distribution of agricultural products have become diverse and specific. Aggressive projects have been carried out to stimulate agricultural distribution and create agricultural brands, and thereby improve the competitiveness of individual distributors. Also, “foothold” APCs are supported with larger and more specialized facilities.

Designed to create value added through a series of processes such as sorting, storage, and processing, agricultural production facilities are core factors of competitive agricultural distribution. Sorting systems create value added by sorting out agricultural produce based on size, shape, color and sugar contents and through tailored packaging for customer needs. Storage systems are responsible for raising time utility by maintaining freshness of produce.

A recently released comprehensive evaluation report on

agricultural distribution suggests that agricultural production facilities now deal with more produce in the wake of the government support for agricultural production facilities.

According to an investigation of 250 distributors operating a sorting system and 157 operating a cold storage system, the annual average operating ratio turned out 36.6% and 43.4% respectively, which shows a considerable difference from the result of the comprehensive evaluation report. These low operating ratios resulted from the fact that most distributors handle a single item without connections with other organizations.

The number of efficient operators drawn from the DEA model is only 26 out of 150. Agricultural cooperatives and corporations account for about 50 % each. According to the result of an analysis utilizing diverse variables including input and output, efficient businesses, compared to their inefficient counterparts, have more cooperative pooling practices, higher operating ratios of relevant facilities, and more diverse shipping routes, which are clear standards determining the efficiency. If changes in the agricultural distribution environment are taken into account, it can be said that the operators that inefficiently use agricultural production facilities do not have established a management system that efficiently utilizes their sorting and cold storage facilities. Therefore, it is necessary to suggest methods to efficiently use agricultural production facilities for businesses that have larger sorting and cold storage systems and that pay more for those facilities, rather than ones with higher management skills.

The results of this study, and problems of agricultural production facilities, can be summarized as ① lower operating ratios due to insufficient systematization of producers and loyalty, ② unplanned arrangement of agricultural production facilities without consideration of local conditions, ③ distributors' aggressive practices to secure raw materials and insufficient integration of implementation systems, ④ agricultural production facilities for a single item, ⑤ selection of inappropriate operators, ⑥ obsolete facilities and frequent failures, and ⑦ low professional expertise in agricultural distribution. The major problems, among those, are obsolete facilities, frequent failures, and inadequate management which require countermeasures.

The methods to efficiently use agricultural production facilities include ① systematization of multi-item producers and diversification of procurement systems, ② proactive marketing, ③ establishment of an integrated implementation system in each area, and ④ efficient arrangement and management of agricultural production facilities. Among these, inducements for higher systematization and stronger confidence among producers should be established for the systematization of multi-item producers and diverse procurement systems. Also, conflicts among the businesses should be resolved by removing aggressive practices to secure produce. Flexible decision-making procedures should be established and marketing strategies should consider the competence of each operator. Local governments should design their own project directions, and the methods to promote cooperation among the operators of local agricultural production facilities should be established to adopt an integrated implementation system in each area. In addition, the

validity of local agricultural production facilities should be reviewed closely, and pre/post-inspection systems to prevent failures and aging of facilities should be built.

In order to promote competition among producers while strengthening the economy of scale and business specialization, the government policies related to agricultural production facilities should ① establish objective standards to evaluate agricultural production facilities, ② set up measures to strengthen the support system and multi-item operating systems in consideration of local conditions, ③ strengthen stronger unit management systems, ④ support integrated implementation structure in each area, and finally ⑤ foster more experts specializing in agricultural distribution in production regions.

Researcher Tae-Gon Kim, Moon-Ho Park and Joo-Nyung Heo

E-mail taegon@krei.re.kr

The Purpose of Study and the Concept of Urban Agriculture

Increasing participation in agricultural activity by urban residents is developing into various forms. With income and spare time of urban residents increasing along with more densed population, their participation in agricultural activity will increase further. The purpose of this study is to respond to such phenomenon, thereby suggesting desirable vision expected of urban agriculture and also suggesting tasks to realize it. Focus is placed on promotion of urban agriculture as an industry, creation of decent urban environment through agriculture by urban residents and dissemination of regional transaction through alliance between consumer and producer.

The concept of urban agriculture was widely defined, for example, agriculture as a means of livelihood for urban residents, agriculture as a living, and agriculture that includes exchange and direct transaction. Agriculture as a means of living is further divided into outdoor agriculture and technology-intensive facility agriculture as an industry. Agriculture as a living aims to achieve experiencing and learning of agriculture.

As understanding of agriculture improves, exchange and direct transaction using urban resident's agriculture as a medium further

increase. Exchange and direct transaction have an impact of boosting consumption of agricultural products and added-value of agriculture.

Role of Urban Agriculture

Urban residents expect urban agriculture to play various roles in various areas, including giving people opportunity to rest, enjoy leisure and nurture emotionality, opportunity to experience agriculture and planting plants, help children learn about agriculture, create beautiful landscape in a region, prevent overpopulation of cities, and succeed traditional culture related to agriculture as well as supply of safe and fresh agricultural products.

With income and leisure time increasing, participation in agriculture by urban residents will further spread, in which process demand for safe and environment-friendly production of products in industrial agriculture will increase, with demand for experiencing agriculture including kitchen garden use, and exchange and direct transaction rapidly rising.

Problems of Urban Agriculture

Expectation for urban agriculture is expected to be varied and higher. Urban agriculture, however, has some managerial risks, including high land price as well as diversion of farmland and lease. In addition, increasing production cost and restriction imposed on agricultural management by environmental regulation is another problem of urban agriculture. Furthermore, kitchen garden park for which the number of user is surging is in short supply, and relevant facilities including washroom, resting facility and parking lot are not

well furnished. Only when those problems are addressed can urban agriculture continue to develop.

Vision of Urban Agriculture

Urban agriculture tends to decrease in size in the process where farmland is combined with urban use. However, it is important to acknowledge that from an industrial perspective, urban agriculture plays a multiple role in preserving national land and environments in highly-densed urban society, prevent disaster, provide green land and create landscape.

Urban agriculture as a living is resulting in increase of home kitchen garden, rooftop garden, box agriculture as well as kitchen garden. There are cases where general agriculture of producing rice and vegetables is diverted into kitchen garden. In other words, with demand for agriculture as a living increasing, it is being diverted into kitchen garden, in which process increasing exchange and direct transaction is expanding consumption of local agricultural products.

The vision that urban residents expect of urban agriculture includes supply of safe agricultural products, generation of employment and income, conservation of bio-diversity, purification of air and water quality, alleviating climate, education on learning and emotionality, and maintenance of local community.

To be more specific, urban residents expect urban agriculture to first, supply safe agricultural product, in which process employment and income are generated in a region. Second, they expected urban agriculture not only to play a environmental and ecological role of preserving national land, but also a role of alleviating climate by

purifying air and water quality. Third, urban agriculture is expected to provide emotional education and amenities and maintain traditional culture and dietary culture.

Forth, people expect urban agriculture to create joint community that allows for exchange with rural areas and maintenance of local community using agriculture as a medium.

Tasks of Urban Agriculture

Long-term Securing and Preservation of Farmland

First issue to be addressed in urban agriculture is managerial uncertainty over farmland. With urban use and agricultural use are competing for farmland, managerial uncertainty is always inherent.

Due consideration needs to be made to incorporating “Agricultural area” city planning scheme, an area that secures and preserves farmland. Long-term preservation of agricultural area for agricultural purpose and establishment of lease system will address managerial uncertainty related to farmland. Instead, proper compensation for property right to farmland should be provided.

Once the population starts to decrease, we might shift to a new era where housing site is diverted to green belt or farmland from the era where farmland was diverted into housing site. Based upon the assumption that agriculture plays a multifunctional role in urban area, foundation for sustainable development of urban agriculture can be laid if proper compensation for multifunctionality of agriculture is provided in the form of subsidizing price of agricultural products and direct payment system, thereby preserving farmland in the long run.

Increasing Supply of Kitchen Garden

Demand for urban agriculture, in particular, for kitchen garden is soaring. As kitchen garden is being currently operated by individual farms, kitchen garden itself is in short supply and related convenience facilities are inadequate.

These issue can be addressed when local governments secure and provide farmland for kitchen garden. Local governments need to think about how to install and lease facilities that urban residents prefer by buying or renting farmland. In addition, as was confirmed by fact-finding survey, ways should be found to ensure diversion of lands lumped in certain unit of area in case that agriculture as a means of living is shifted toward kitchen garden as opposed to individual diversion of individual case.

Increasing Exchange between Consumer and Producer

The beneficiaries of multifunctionality of urban residents are urban residents or consumers. Consumers, in general, can establish a system for “Agriculture that Citizens can Support” through service for agricultural works as well as through financial support.

Support for agriculture by citizens or local community is found in CSA of the U.S. and AMAP of France. Those systems are expected to response to globalization and thus promote local agriculture by protecting small-scale producer in the region.

Stable transaction of fresh and safe agricultural products through exchange between consumer and producer, direct transaction and direct sales can be an important tool for co-existence of city and agriculture.

Planned Fostering of Urban Agriculture

In order for urban agriculture to develop in a certain direction and provide a sufficient service for urban residents, development plan for urban agriculture should be established, and the government and urban residents

need to play new roles.

As agriculture is considered as a necessary facility for city, an active participation by consumers is inevitable. For planned development of urban agriculture, “Basic Act on Urban Agriculture” needs to be enacted to create the basis for support and regulation, while local governments enact relevant ordinance to come up with measures to flexibly respond to local conditions or consumer demand.

Researcher Yong-Taek Kim, Tae-Jin Kwon, Byeong-Ryul Kim, Ik-Su Jun,

Jong-Yeol Yoon, Min-ji Nam and U-Rim Cho

E-mail yongkim@krei.re.kr

Chapter 2. Food Security and Overseas Agricultural Development

1. Outlook for International Grain Supply and Emergence of Food Security Era

After global food shortage in 2007 and 2008, distrust over international grain trade and concern over food security spread, particularly, among food importing nations and low-income developing nations. Especially, as a result of export restriction ban by grain exporting nations, food insecurity rapidly spread, and concern over food security became a reality. As was shown in recent Russia's export ban for wheat, food-related issue in one certain nation tends to immediately spread to much of the world, leading to increasing concern over food supply.

The tasks that the last global food crisis have thrown upon Korea, a large food importing nations, are as follows. First, how will the supply of international grain be and what is the outlook for international grain price?(or outlook for future international grain price?) In other words, questions have been raised over whether surge in international grain price would only be temporary or whether it would continue to be on an upward trend.

Second, question has been also raised over the legitimacy of worrying about food security at a time when exporting of excessive domestic rice is being considered (the concept of food security), which is in line with the argument that the issue of food security has to do with income or purchasing power to buy food, with unstable food supply not being an issue. Third, questions has been raised that we can simply import necessary foods except rice (access to food security), which led to the argument that although self-sufficiency ratio for wheat, bean and corn is very low, we can import them from international grain market on a stable basis. Forth, some people have questioned over what strategy we have to consider if food security is an issue (solution for food security), which led to the question over what kind of domestic and foreign measures can exist if food security does matter.

Fifth, some people asked if overseas agricultural development project, which is gaining attention these days, would be of a practical help (practicality of overseas agricultural development project).

With many overseas agricultural development projects of the past having ended up in failure, the issue of whether overseas agricultural development project as a solution for food security would work is in front of us.

To begin with, taking a look at outlook for international grain price suggests that even though global food crisis eased down since the late 2008 due to global financial crisis, root cause of food crisis has not been addressed yet. As many experts across the globe point out, international grain price is highly likely to increase again at any

time because international grain price declined due to temporarily plummeting demand for food, with factors that affect international grain supply and demand structure remaining in place.

Upward trend and instability of international grain price is well documented in international grain supply and price outlook published by many international organizations. In particular, even the OECD-FAO report, which tends to be conservative in making prediction, suggested that future international grain price will not go back to the level of the past, and will remain high in mid-to-long term. Price outlook for agricultural produce by those international organizations which predicted in 2009 that the price will increase by up to 30% for the next 10 years was upwardly adjusted up to 40% in 2010.

Such re-adjustment of price outlook well demonstrates that international grain price will continue to increase well into the future. Of particular importance were that energy and grain were linked through bio fuel, contributing to more intricate relation among factors that affect food supply and greater uncertainty. All of these heightened the possibility of international grain price becoming volatile on a short-term basis, and the need for rearranging system such as early-warning system to monitor international grain price on a real-time basis increased.

In order to identify the fundamental factor that determines the situation in international grain price, it is important to recognize that the characteristics of industrial structure of international grain market is different from that of other trading items. International grain market have various characteristics as follows: primitive market in

which domestic production and consumption is considered first, thin market where trading volume is very small compared to production volume, synchronization of price movement as a result of alternative demand for major crops, oligopolistic market consisting of some exporting nations and many importing nations, market structure in which major grain companies handle a significant portion of international trading volume for grain, frequent volatility caused by natural disasters and investment by international investment fund.

As many predictions that international grain price will continue to rise in the future are gaining momentum, concern over food security is rapidly spreading across the world. Especially, underdeveloped countries and grain importing countries are taking the lead in making efforts to prepare for food security. In addition to such reality, recently, the concept of food security is now being expanded to include food safety, nutrition, environment and consumption of individuals. As such, the concept of food was also expanded to go beyond simply securing stable supply in the past. However, under such expanded definition of food security, policy priority changes depending on the beneficiary of food security(individual, household and nation), thus it is important to establish policy for food security fully taking into account the unique circumstance that affects a certain nation.

Korea faces many difficulties in terms of food security. For starters, the nation's food self-sufficiency ratio is low at less than 27%, and the nation has inefficient import structure of replying on several few countries, such as U.S, Japan, Australia and China, and multinational major grain companies, putting itself in

disadvantageous position against rising international grain price of the future. Furthermore, the nation's effort to establish policy and strategies to cope with emergency in food supply is not sufficient.

Korea's countermeasures against such global food situation can be both international and domestic. On international level, as was well demonstrated by the last global food crisis, there is no effective measure aside from expansion of aid for agricultural development in developing nations. Therefore, the nation is not in a position of replying on international community to address its food security, but solve the issue on its own through domestic policy. On the domestic front, expanding domestic production is important, but it is near impossible to expand it up to the point where it can supply enough to meet domestic demand 100% due to small arable land of the nation.

Thus, it is necessary to relieve the uncertainty in international grain market through utilization of futures exchange, expanding long-term contract and stockpiling system, while trying to secure supply route of food through overseas agricultural development. In addition, consideration needs to be paid to how to minimize food wastes as part of important policy. Efforts need to be made to enforce various domestic policies to deal with food security, while taking into account various scenarios including Japan's food security measure and making corresponding policy to cope with it.

2. The Concept of Food Security

Recently, the concept of food security was expanded to include food safety and nutrition for consumers and households. However,

as international grain price is skyrocketing again backed by 2007 and 2008 global food crisis and the recent price increase in Russian wheat and U.S corn, the importance of food security is leading to urgent need to secure national food on a stable basis. In particular, due to Korea's high dependency on imported grain, the nation needs to adopt various perspective for various factors and diverse approach to secure stable supply of food.

3. Development of Food Security Indicators

For a more objective grasping of a nation's food security situation, many food security indicators have been developed so far, but those indicators have not been able to fully reflect the changing concept of food security, and they are believed to be divorced from the recent food security situation.

Thus, in an attempt to reflect the concept of today's food security and also to secure stable supply of food of a nation, food security indicator needs to be newly developed.

Developing new food security indicators requires reflection of comprehensive concept of food security and national uniqueness, and to this end, 21 detailed indicators were developed and incorporated to comprehensive index on the areas of international territory (availability of global food, global grain market and trade), national territory (availability of domestic food, stability in distribution and logistics), and household and consumer territory (household's accessibility, food safety and nutrition). When incorporating these indicators into comprehensive index, differential weighted value was applied for each territory to reflect the importance of policy.

Food security indicators that were newly developed based upon this method shows food security level of 53.3 for 2009 and 2010, and trends of the past 10 years were similar to those of grain self-sufficiency ratio.

Serial food security indicators of the past well reflect 2007 and 2008 global food crisis situation and its implications. Overseas agricultural development is one of the policy options that can be considered for nation's food security along with increasing domestic food production, futures exchange and expanding long-term contract and operation of stockpiling mechanism, and it needs to be combined into food security indicator to better reflect Korea's unique food security situation.

Food security indicators that was calculated this way include overseas agricultural development as a detailed index, allowing for targeting food security level through overseas agricultural development. If overseas agricultural development projects that can be a desirable alternative to addressing the limits of domestic and foreign food security measures are carried out successfully enough to secure a stable supply of grain, direct and indirect index in food security indicators will improve, leading to overall increase in food security indicator. To be more specific, successful implementation of overseas agricultural development project allows us to raise food security indicator from a current 53 in 2009 and 2010 up to 60. To this end, a more specific policy vision and strategy is needed to secure additional 1 million tons of grain (7.5% of import in 2009 and 2010) through overseas agricultural development of the next 10 years.

Chapter 3 Performance and Tasks of Overseas Agricultural Development

1. Performance and Achievements of Overseas Agricultural Direct Investment in the Field of Agriculture, Forestry and Fisheries

The size of Korea's overseas direct investment in agricultural, forestry and fisheries sector is very small, representing about only 0.2 to 0.9% of a total overseas direct investment in other industries. Agriculture makes up the larger portion than forestry and fisheries sector, and in agriculture, grain and other food crop producing industry represents the highest portion. Regionally, overseas direct investment in agricultural food industry is concentrated in Asia, followed by Latin America and North America. Looking at other countries' overseas direct investment in agriculture, forestry and fisheries sector shows that stock represents only 0.08% of the entire industries, but the reasons behind such inactive overseas direct investment in agriculture, forestry and fisheries sector are attributable to strict industrial regulation on agriculture sector, restriction on foreign ownership of farmland and companies' strategies to prefer supply chain of forward and backward industries over direct farming.

To analyze managerial performance of agricultural food companies that have entered into overseas market, 215 local subsidiaries were surveyed. Region by region, Asian market has attracted the highest number of those local subsidiaries, followed by North America and Europe, with the average working years being nearly 6.3 years. In addition, local sales represented 42.3%, and

domestic sales made up 39.3%, with more than 55.7% of raw materials being procured locally.

Operating profit of agricultural food industry was minus 4.1% as of 2009, and net profit for the year was minus 12.9%, recording a very poor operating revenue. Financial health and return on investment of agricultural food companies were not in good condition.

As for managerial performance of overseas direct investment by items, operating profit for grain was minus 44.0%, and net profit of the year stood at a very poor level of minus 80.6%. However, studying financial status of entire companies suggests that despite their low operating profit, their financial structure is not that worrisome.

Purposes of entering into overseas market by those agricultural food companies include, in terms of investment, penetration into local market, at 37%, facilitating export at 18%, followed by resource development at 16.2%. In terms of overseas sales environment, 79.1% of the total companies surveyed answered that their competitive relation with local companies is above the average, showing that investors evaluate local sales environment generally positively. Operational difficulties that were identified include personnel management and finance-related issues, and in particular, finance and production factor were the biggest source of problem for agricultural, forestry and fisheries sector.

Korea overseas direct investment in agricultural sector dramatically increased after the food crisis, but still remains low compared to other industries. Such low investment in agriculture is

attributable to the past experience of unsuccessful investment and hesitation to engage in the business of direct farming due to low-return, high-risk business characteristics of agriculture. To facilitate overseas agricultural development, efforts need to be made to seek to enter into various sectors related to agriculture aside from growing of agricultural products, including food and average industry, retail and whole sale industry and agricultural materials industry. To ensure successful conduct of business in local area, development of programs and fostering of regional experts to build capacity in each area is needed.

In addition, agricultural sector is an important industry at a national level, not only in terms of economics, but also in terms of food security, and thus the government needs to provide an active support for overseas agricultural development by the private sector. Analysis of trends and managerial performance of overseas direct investment by Korea's agricultural food companies demonstrates that share of investment by agricultural food companies in total overseas direct investment is very small, but it has a long history in various areas, and it is affected a lot by changing macroeconomic variables like other industries. And it also suggests that support should be given at a government level to foster experts in agricultural food industry of Asia and to relieve managerial difficulties facing companies considering that the investment is concentrated in Asia.

2. Current Situation and Tasks of Overseas Agricultural Development

The government provided 21 billion won in loan from 24 billion overseas agricultural development project fund as of 2010, and the

loan was provided for repayment in 7 years with a grace period of 3 years at an interest rate of 2%. A total of 18 companies received government-back loan for overseas agricultural development until 2010, and those companies entered into a total 7 companies. One of the characteristics of overseas agricultural development project by Korean companies after 10-year overseas agricultural development plan is that first, most of the countries that Korean companies entered into are transition countries except for the Philippines and Brazil. Korean agricultural food companies venture into overseas agricultural development business because of abundant labour, good agricultural condition including favorable climate and low production cost including rental fee and wage despite the high national risks of those countries.

Second, agricultural products that companies plan to produce in those countries are mostly bean and corn, and third, most of the companies prefer unilateral investment. Forth, companies prefer local sales of products to bringing them back into the nation. Fifth, the proportion of production type in which domestic companies directly produce in local area is higher than distribution type. Sixth, the biggest difficulties facing the companies in local area is weak agricultural infrastructure. Last, companies that entered into overseas market are in dire need of government's financial support.

The characteristics of global overseas agricultural development of the past 3 years can be summed up as follows: most of the investment is for food production, and the investment is mostly concentrated in Africa and Southeast Asia. In case of Japan, the nation embarked on agricultural development project for Cerrado,

Brazil in 3-stages for a total 22 years from 1979 to 2001, in which private companies took the lead, and the government provided indirect support. Japan general trading company provided a lot of lessons to be learned including laying the foundation for stable import of grain.

There are two mixed views on overseas agricultural development. One is a negative view that it is one form of neo-colonialism and the other is a positive view that it is a new opportunity to develop a new agriculture. Despite the positive impacts that international agricultural investment has, such as transfer of advanced agricultural technology and enhanced quality of agricultural products, international organizations began to recognize the need for establishing international guidelines on overseas agricultural investment as a result of identification of cases, including exclusion of local residents and negligence of local laws and rights.

There have been discussion over establishment of international guidelines for responsible international agricultural investment centering around international organizations, including World Bank and FAO, and other countries interested in overseas agricultural investment. Guidelines that were suggested include respect for right to land and resources, transparency and accountability, and social and environment sustainability. To facilitate responsible overseas agricultural development, international rules should be created to ensure win-win situation where both investing and recipient country can benefit.

Korea is now expanding foreign direct investment, or FDI, to increase its insufficient overseas direct investment, and is trying to

build consensus among stakeholders at home and abroad and secure a appropriate level of transparency and accountability, while emphasizing win-win strategy to make sure that both investing and recipient nations can enjoy the benefit from the investment. Currently, Korea has already established guidelines to facilitate responsible overseas agricultural development and investment, and is now in the process of consulting with relevant government agencies and collecting public opinions.

In Korea, Korea Rural Community Corporation's support center for overseas agricultural cooperation and development is coordinating and providing necessary services for overseas agricultural development, but it is still in its infant stage, thus it needs to take advantage of documents and experts more actively if it is to provide a more specified services by region, item and type. To secure and provide professional personnel, retired experts need to be utilized and internship program needs to be operated for those students with interests in overseas agricultural development.

For a more effective technological support, “Overseas Agricultural Development Technology Roadmap” needs to be drawn in order to create strategy for relevant technological support. In addition, in order to effectively align information systems of those overseas agricultural development-related organizations, which currently are diversified, with a view to establishing information support system for overseas agricultural development, “Overseas Agricultural Development Information System(tentative)” should be established. Diplomatic response and support for export ban for agricultural products imposed by those countries where Korean companies

entered is necessary. In addition, it is necessary to establish strategy to incorporate energy and resource cooperation and agricultural cooperation into a comprehensive package for penetration into overseas market. Lastly, to procure financial resources on a stable basis, a way would be sought not only to secure government fund, but also private fund as well.

3. Current Situation and Tasks of ODA in Agriculture, Forestry and Fisheries Sector

ODA of Korea consists of bilateral cooperation and multilateral cooperation. ODA program is led, aligned and coordinated by the prime minister's office. A total ODA size of Korea amounted to 1.86 trillion won as of 2009, and since the mid-2000, bilateral cooperation fund centering around grant increased, representing more than 70% of entire ODA as of 2007. By sector, the share of agriculture, forestry and fisheries sector in total ODA dramatically increased from 1.0% in 2000 to 10.2% in 2007 in terms of funds approved. By region, bilateral cooperation fund is going mostly to Asia, followed by Africa and Latin America.

Since its entry into OECD DAC in 2009, Korea has been expanding development cooperation. The size of international agricultural cooperation and development project significantly increased to 4.2 billion won in 2010, from 1.8 billion won in 2008 and 2.8 billion won in 2009. The Ministry for Food, Agriculture, Forestry and Fisheries plays an important role in international agricultural development and cooperation, but the project of building agricultural infrastructure that requires a lot of fund is conducted by

funds from the Ministry of Foreign Affairs and Trade, or Export/Import Bank, with administrative affairs managed by KOICA and Korea Rural Economic Institute. In addition, “Global Consultative Committee for Agricultural, Forestry and Fisheries Cooperation” was created in March 2010 to exchange information on international development and cooperation in agriculture, forestry and fisheries sector pursued by various institutes and to enhance operational efficiency through coordination of projects.

One of the problems of ODA in agriculture, forestry and fisheries sector is that collaborative system between institutes conducting projects in agricultural sector, and its linkage to overseas agricultural development are weak. In order for the Ministry for Food, Agriculture, Forestry and Fisheries to increase the efficiency of aid and to improve national interests by linking aid and overseas agricultural development, it needs to establish a comprehensive support system that can connect projects and funds of institutes. As a current level of budget cannot conduct projects effectively, the function of “Global Consultative Committee for Agricultural, Forestry and Fisheries Cooperation” should be strengthened to upwardly adjust the size of budget and to combine and coordinate patchy works scattered across the sectors.

Chapter 4. Penetration Strategy for Overseas Agricultural Development

1. Types of Overseas Agricultural Development

Types of overseas agricultural development vary to a significant

degree depending on the region to penetrate, items and investment method. Therefore, establishing penetration strategy for overseas agricultural development requires efforts to create penetration strategy that fits various types of development projects. Nevertheless, in order to develop success model for overseas agricultural development, first of all, global value system by region, item and investment type needs to be analyzed, trends in relevant products and services should be examined, and areas with competitive edge should be identified. And, SWOT analysis for the industry concerned is carried out, benchmarking company is analyzed for establishing penetration strategy that are suitable for items and regions concerned under the entire global value system.

Depending on who takes the lead in global value chain system, types of development projects are divided into producer-oriented type, buyer-oriented type, support group-oriented group and combination model, and they can be also categorized into various kinds depending on investment type, production factor-transfer method and driver of project. Recently, the government is suggesting public-good type overseas agricultural development in which public and private sector collaborate as opposed to pursuing overseas agricultural development led by private sector. Private type and public-good type have their own merits and demerits, but considering various difficulties facing agricultural development in terms of resource diplomacy, entering into overseas market where public and private sector work together would be effective.

2. Implementation Strategy for Overseas Agricultural Development by Region

When you look at the process of developing strategy for penetrating into Ukraine in accordance with global value system analysis, you can consider different kinds of investment method for different stages of production, transport and trading of grain. For example, 4 kinds of investment alternative can be considered, including investment in production stage, investment in elevator in mountain area, investment in riverside elevator and investment in port elevator. Analysis of cost and added-value at each stage of distribution shows that products such as wheat, corn and soybean create the highest level of added-value at elevator stage, leading to the conclusion that investing in port elevator is a desirable investment strategy.

Generally, the composition factors of establishing penetration strategy for overseas agricultural development include the issue of whether managerial resource to bring about competitive edge is secured (identifying core capacity), arrangement of production location or production facility (selection of production location), selecting entering market (selection of entering market), selecting entering method (selection of entering method), and control, management and coordination method of local subsidy (control and management).

A closer look into detailed penetration strategy for agricultural development in Ukraine taking into account the above strategy for entering into overseas market shows, first, that we need to develop strategy and stepwise plan to expand investment that enables us to

participate at the most advantageous position and secure value in each area of value chain of grain trade between Korea and Ukraine.

For example, it is possible to establish investment strategy of giving priority to investing in port elevator according to global value chain analysis. Second, we can establish access strategy that focuses on securing and utilization of unused land that can accommodate irrigation facility in Southern region of Ukraine and under-utilized idle lands. Third, areas of interest of the Government of Ukraine can be addressed through creation of employment and income generating opportunity for people of Ukraine (including ethnic Koreans). Fourth, a way for partnering and cooperating with the government of Ukraine and international investment institute (EBRD, IFC) can be sought. Fifth, ODA, which will increase significantly in the future can be proactively linked to agricultural development project in Ukraine, thereby encouraging soft landing of agricultural development project in Ukraine.

For participation in grain production sector in Ukraine, securing of massive agricultural land is a necessity. Therefore, it is necessary to negotiate with the government of Ukraine (central and local government) to secure agricultural land for investment under the condition that investment will be made to establish agricultural production base. Securing a large unused land or under-utilized private agricultural land in a rental market can lead to saving of time and additional negotiation expense.

A realistic strategy is to reaffirm the effectiveness of Korea's agricultural investment through pilot project on government-owned farmland and expand farmland in a staged manner. For overseas

agricultural development project, establishing strategy for project implementation is a necessity, including domestic consortium by private company.

As a strategy for investing in agricultural development in Latin America (Brazil, Argentina), first, it is necessary to consider the potential of agricultural development in Brazil and Argentina in terms of low production cost and diversification of import route of grain. In particular, Brazil has an abundant farmland and relatively low land price, therefore it is possible to secure production base in Brazil.

But the fact that traditionally major grain companies have a strong foothold in distribution and logistics in this region makes it difficult to bring in produced grains and also difficult for other companies to newly enter. Another obstacle is an outmoded and weak logistical base, making it difficult for companies to enter into grain business. However, given the fact that Japan has already entered into the region with a strong presence suggests that there still remains possibility.

Second, it is necessary to strategically consider and approach various tools including investment method, short-to-long term, implementation entity, control and management entity when engaging in agricultural development.

A staged approach is necessary in which in short term, distribution type of utilizing existing system (major grain company-based system), is adopted before eventually entering into production sector in longer-term. Brazil, with an increasing arable lands offers a relatively greater opportunity related production base

(arable land).

However, it is risky to enter into the region only with production type without any proper regard for distribution, dominating power of major grain companies in Argentina is weaker than those of Brazil, and it is possible to enter into Argentina through strategic partnership with local agricultural business. Third, a masterplan is needed to establish an original overseas agricultural development system for a long-term perspective. Establishing an original implementation system requires a lot of expense, and also requires control and management ability at every stage of value chain.

To this end, joint investment is more desirable than unilateral investment, joint implementation system in which private and public sector take part in implementation is more desirable, and as for control and management entity, combination type of including all stages of value chain is needed. In particular, just like the case of Zenno of Japan, a strategic consideration needs to be given to establishing large-scale distribution company. However, to improve the efficiency of project operation, distribution company that incorporates private and public entity in the form of consortium is needed.

As a strategy for investing in agricultural development in Russia (maritime province of Siberia), first, it is important to recognize that maritime province of Siberia in Russia possess potential for overseas agricultural development. The region has advantages in that it has superior land quality, and low transport burden due to its proximity to Korea, meaning that geographically, it is well positioned to serve as a production base for Korea after the unification.

However, maritime province of Russia has also weakness and risk factors that serve as a barrier to overseas agricultural development. Weaknesses include cold weather, small regional market, and outmoded social infrastructure including marine transport facility as well as low practicality of overseas agricultural development due to the Russian government's export restriction for wheat.

Second, investment strategy for overseas agricultural development in a region requires a strategic diplomacy of the government. Diplomatic consultation between the two countries over guarantee of legal and regulatory rights is needed, and it is necessary to consider conditional approach to investment in and support for social infrastructure. (related to food security or logistics)

Third, efforts need to be made to seek strategy to utilize economic opportunity in the region, including increasing demand for grain in South Asia. There is an increasing demand for bulky feed for feeding animal in China, and Japan is seeing demand for organic bean increasing. Due consideration needs to be made to grant special tariff treatment for bulky feed that are brought in by those companies that advance into overseas agricultural development in maritime province of Russia.

Forth, strategic investment that takes into account regional characteristics and global value system is needed. Joint investment is more desirable than unilateral investment in dispersing risk, and when it comes to transfer method of production factors, integrated approach is needed that takes into account both farm-type that utilize the abundance in production base (arable land) and distribution-type that takes into consideration shortcomings of distribution-type.

In other words, integrated model is needed that manages risks that exist at every corner of value chain. It should be considered, however, that such integrated type requires relatively a lot of capital. As for implementation entity, public sector that is relatively more capable of bearing risks should be chosen first, but it is also necessary to actively encourage the participation by private companies so as to ensure that efficiency of the private sector can be demonstrated.

One of the strategies for agricultural development in South Asia (Cambodia) is first, Cambodia's soil quality is superior to that of Vietnam and Thailand, and the government of Cambodia is favorable to overseas agricultural investment, making itself a favorable site for investment. It is possible to lease state-owned land for long-term period (up to 99 years, renewal is possible), and productivity can be significantly enhanced only through introduction of technology (introduction of mulching cultivation technology for hay). Corn imported into Korea from Cambodia is competitive compared to domestic corn, and it is analyzed to be competitive against the U.S. corn in terms of nutrition and quality, and price.

But it is difficult to secure profitability from overseas agricultural development in Cambodia in short run since a significant amount of investment is required in agricultural production base at the early stage of development. Recovery period for the capital invested tends to be protracted, making it difficult for private companies to enter. Logistical facilities including agricultural input and road are very weak, and there is also a country risk including corruption by public servants.

Second, for transfer of production factor, integrated type is needed that takes into account the advantages of both farm-type and distribution-type. However, as integrated-type approach requires a significant investment, public and private sector need to decide their respective role. A public company has a negotiating power in its talk with the local government over issues such as land development method and securing right to use land, and is more likely to mobilize development fund in association with ODA and create synergy effect with overseas aid project.

Third, when engaging in overseas agricultural development, a differentiated and strategic approach is needed in which public company and private company play their respective role. Public company needs to play a role of securing right to use farmland in association with agricultural infrastructure project, while private sector receives farmland that was secured by the public company to carry out agricultural managerial activities. Private sector needs to be granted right to select which crop it will cultivate based on profitability on farmland that it purchased with its own capital or lease, while it would be more desirable to ensure that food crops that are necessary for the nation's food security (wheat, corn, bean, etc) are grown on farmlands that were secured by the public company, with conditional right to use for selecting sales market being conferred.

Forth, it is desirable to make sure that buyer takes the initiative in controlling value chain. It is possible to secure competitiveness only after an adequate quantity is secured through establishment of contract (contracted cultivation) with local producers, and only after

securing a stable supply of quantity is it possible to proactively respond to market situation like China.

In the meantime, grains are imported into the nation mostly through 55,000 ton bulky carrier, while usually importing grains to consume for 1 month every month due to shortage of silo storage facility and limited ability of grain importers to store their imported grains.

Such shortage of storage facility represents a limit to relieving external shock through adjustment of supply and demand in case of emergency, and it also constitutes a threat to the nation's food security. Given the nation's distribution system and exchange of grain, it is absolutely necessary to associate securing of food security with overseas agricultural development as there is no buffer against volatility of international grain price.

Overseas agricultural development.

In terms of economics, successful overseas agricultural development should supply grains at a price lower than that of currently imported grains. That is attributable to the fact that the issue of how to secure competitive edge in competition with major grain companies is the most important factor in overseas agricultural development project.

However, considering the fact that overseas agricultural development is a process industry that requires a significant amount of capital, agricultural development plan needs to be established in a manner that risk of initial investment is reduced through investment strategy of associating with public sector and local silo of post harvest strategy, and investment in distribution channel, and

unexpected mismatch between supply and demand can be handled in a flexible way.

In addition, the fact that important data and information on importation of grain of Korea is treated as an internal documents of relevant importers at trading site represents a limit to establishing relevant policy on a realistic basis. Relevant data on grain supply should be provided through direct inspection by the government, and for this to happen, the role of government should be emphasized, and close cooperative relation between relevant organizations should be established.

3. Strengthening the Linkage between Overseas Agricultural

Development and International Agricultural Development Cooperation

A strategy where overseas agricultural development project that focuses on investment and international agricultural development cooperation that emphasizes aid are being closely linked to each other is gaining momentum, while the size of international agricultural development cooperation is increasing. The characteristics of humanitarian assistance is being emphasized for international agricultural development cooperation, while strategic purpose is being emphasized for overseas agricultural development. What is urgently needed is to establish uniquely Korean international agricultural development cooperation in which symbiotic effect have been generated through linkage between international agricultural development cooperation and overseas agricultural development of different characteristics.

Expansion of development and humanitarian assistance through

international agricultural cooperation can contribute to alleviating poverty and addressing hunger in developing nations. In addition, linking overseas agricultural development and international agricultural cooperation can help expand overseas investment by private companies. Building trust between two countries through international agricultural development can naturally lead to overseas agricultural development project, at which stage, private public partnership model, or PPP model is gaining attention these days as linkage model between overseas agricultural development and international development model, in which private companies enter into the recipient countries for investment.

It is appropriate to implement PPP model in a manner in which in initial stage, the government takes the initiative in encouraging private companies to participate and eventually shift to a way where private companies apply for project support. It is necessary to prepare for guidelines for PPP project including projects subject to support, size and monitoring, and it is also necessary to carry it out in the form of joint support for project that enables a clear sharing of costs between government and private company at every stage of project.

One of the expected outcomes that the government, participating private companies and the recipient government can get from linkage between development and cooperation is that first, the government can address its concern over food security, for example, through securing food security and food resources and other resources. In addition, it can win the public support for ODA project by working together with private company, and enhance the sustainability

of ODA by bringing in professionalism, technology and managerial capacity of private companies.

Second, this way allows participating private companies to address high risk that they face when they engage in investment without prior works by the government, while also alleviating burden from initial costs. Third, the recipient government can lay the foundation for improving agricultural production environment and building friendly relation between the two countries through prior arrangements including infrastructure in the initial stage of project. For strengthened relation between international agricultural development project and overseas agricultural development project, organizational and systematic realignment for innovating operational system of international agricultural development cooperation is needed.

A policy shift has to be made toward the one that strengthens the linkage between ODA and KOICA that agriculture-oriented organizations, including MIFAFF, and EDCF which is managed by the Ministry of Strategy and Finance. Furthermore, due consideration needs to be made to incorporating organizations related to MIFAFF in order to ensure a shift toward the system that coordinates a multiple operational system of international agricultural development cooperation. Improving the ties between overseas agricultural development project that focuses on private-investment and international agricultural development cooperation project that aims at enhancing national prestige is valuable as a basic model for Korean-type international agricultural development.

Korea-type development cooperation model is a development

cooperation model at a national strategic level that focuses on Korea's competitive edge and enhance achievement of development cooperation and national brand. This model, which harmonizes dual goal both at national interest and strategic level, is a model that is differentiated from existing development aid model of developed nations. In addition, in order to facilitate participation in ODA project by private companies, it is necessary to simplify implementation procedures of ODA project.

4. Implementation Strategy of Overseas Agricultural Development

Generally, basic components of establishing implementation strategy for overseas agricultural development include the issue of whether managerial resources to obtain competitive edge was secured (identification of core capacity), arrangement of production location or production facility (selection of production location), selecting market to enter (selection of market to enter), selecting ways to enter market (selection of ways to enter) and method for controlling, managing and coordinating local subsidiary (control and management).

Linking basic components of strategy and establishing advancement strategy for overseas agriculture by region can result in the following 7 strategies for engaging in overseas agricultural development. Advancement strategies for overseas agricultural development drawn include 1) penetration strategy based upon analysis of global value chain system 2) strategy that considers capital, technology and managerial capacity as core capacity 3) strategy that places a priority on the region with international

competitiveness 4) strategy that selects consortium between public and private company as an implementation entity, with investment method being either joint investment or integrated investment (combining production type and distribution type) 5) strategy that strengthens the linkage between overseas agricultural development and international agricultural development cooperation 6) strategy that expands function, role and investment at value chain level in a phased manner 7) strategy for government's systematic support.

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